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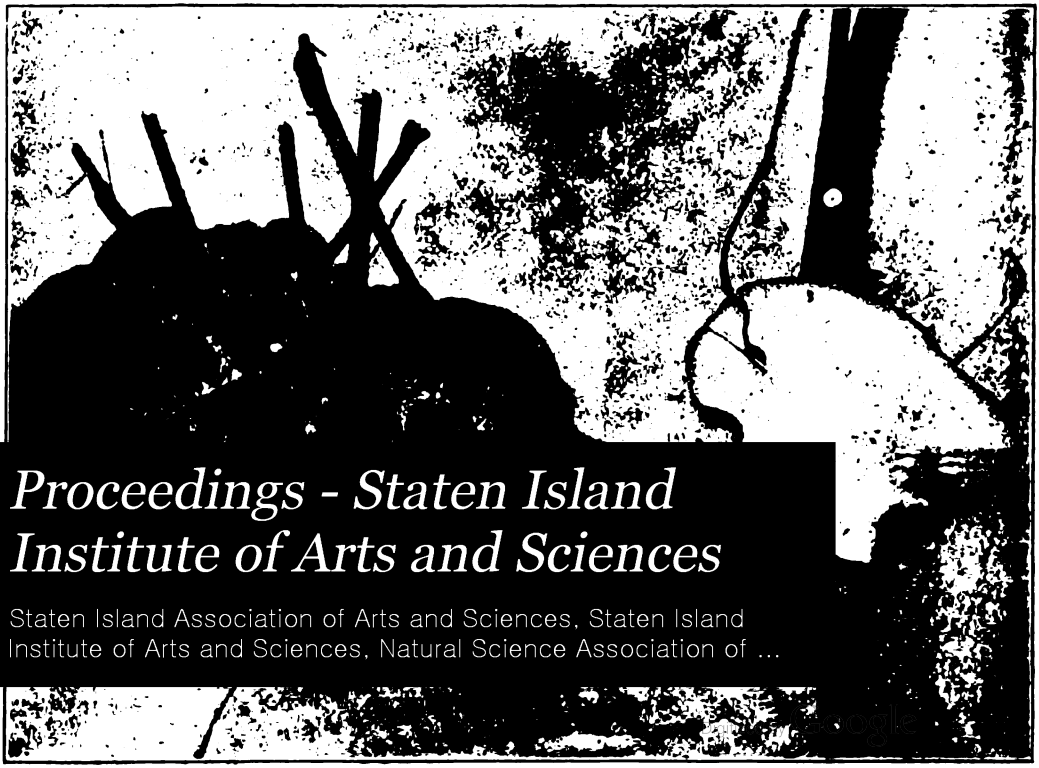

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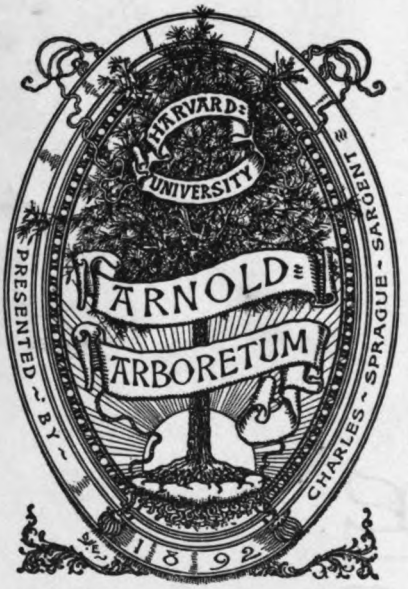

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOLUME I.

JUNE 1905–MAY 1907.

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

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NOTICE.

PUBLICATIONS OF THE ASSOCIATION.

Proceedings of the Natural Science Association of Staten Island.

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883 to June 3, 1905, and were included in nine volumes, separately indexed, as follows:

Volume I, pp. 74, Nov. 10th, 1883—Oct. 13th, 1888.
" II, " 87, Nov. 10th, 1888—Oct. 10th, 1891.
" III, " 67, Nov. 14th, 1891—Oct. 14th, 1893.
" IV, " 86, Nov. 11th, 1893—Oct. 12th, 1895.
" V, " 97, Nov. 9th, 1895—Oct. 10th, 1896.
" VI, " 64, Nov. 14th, 1896—Oct. 8th, 1898.
" VII, " 79, Nov. 12th, 1898—Oct. 13th, 1900.
"VIII, " 92, Dec. 8th, 1900—Oct. 10th, 1903.
" IX, " 51, Nov. 14th, 1903—June 3d, 1905.

Any of the above listed volumes may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. v, No. 5, Mch. 14th, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. vii, No. 15, Mch. 10th, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. viii, No. 25, Oct. 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Proceedings of the Staten Island Association of Arts and Sciences.

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all active, life, honorary and corresponding members and patrons who are enrolled as such at the date of issue.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents and Index, is as follows:

Part I, June-December, 1905, pp. 1-20, issued April 10, 1906.
" II, January-May, 1906, pp. 21-69, issued July 9, 1906.
" III, October-December, 1906, pp. 71-92, issued April 17, 1907.
" IV, January-May, 1907, pp. 93-136, issued September 20, 1907.

The Act of Incorporation, Constitution, and By-Laws, etc., (Pamph., 8vo, pp. i-xxv. 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 22th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxvii. 1907), will be sent free on application

This notice is given for the information of all who may desire to obtain back parts or numbers or complete volumes before certain of the issues are exhausted.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application.

The right is reserved to withdraw any part or numbers from sale at any time.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

CHARLES LOUIS POLLARD, CURATOR,
Staten Island Association of Arts and Sciences,
Borough Hall, New Brighton, N. Y.

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VOL. I. June-December, 1905. PART 1.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,

PUBLICATION COMMITTEE.

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NEW BRIGHTON, N. Y.

[Issued April 10, 1906.]

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MEMBERS OF THE BOARD OF TRUSTEES, 1905-1906.

1.—Elective Members.

Howard Randolph Bayne, *president*.

Arthur Hollick, *secretary*.

Philip Dowell.	William Thompson Davis.
Louis Pope Gratacap.	Charles Arthur Ingalls.
John Blake Hillyer.	George Scranton Humphrey.
William Armour Johnston.	Charles William Leng.
Walter Craig Kerr.	George Starr Scofield.

William Hinman Mitchill.

2.—Ex-Officio Members.

The President of the Borough of Richmond,
Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,
Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1905-1906.

President—Howard Randolph Bayne.

First Vice-President—William Thompson Davis.

Second Vice-President—William Hinman Mitchill.

Recording Secretary—Arthur Hollick.

Corresponding Secretary—Philip Dowell.

Treasurer—John Blake Hillyer.

Honorary Curator—Charles Arthur Ingalls.

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

Vol. I. June-December, 1905. Part I.

SPECIAL MEETING.

SATURDAY, JUNE 3D, 1905.

Meeting held pursuant to the following notice:

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

A meeting of the incorporators will be held at the Staten Island Academy on Saturday evening, June 3d, immediately after the adjournment of the meeting of the Natural Science Association of Staten Island, called for the same place and date.

The purpose of the meeting is to formally adopt the Act of Incorporation, elect officers, and transact such other business as may be necessary to enable the Association to carry out the provisions of the Act of Incorporation.

ARTHUR HOLLICK,
Secretary pro tem.

The meeting was called to order by Mr. Howard R. Bayne, the former president of the Natural Science Association.

Twenty-four members were present.

Mr. Bayne and Dr. Arthur Hollick were elected respectively chairman and secretary *pro tem.*

Mr. J. Blake Hillyer and Mr. Charles A. Ingalls were elected respectively treasurer and curator *pro tem.*

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The following resolution was adopted:

Resolved: that the Act of Incorporation (Chapter 526 of the Laws of 1905) be and it is hereby accepted and adopted by the incorporators constituting the Staten Island Association of Arts and Sciences.

The following members of the Natural Science Association, who were either elected subsequent to the drafting of the Act of Incorporation, or who were inadvertently omitted from the list of incorporators, were elected members of the Staten Island Association of Arts and Sciences and associated with the incorporators:

Arthur H. Allen, Edward C. Bridgman, Thomas A. Fulton, Charles Humphrey, John Martin, John Rader, Thomas D. Rambaut, Charles E. Trout, and Guillermo F. Uhink.

The following were elected to active membership:

Howard H. Cleaves, Princes Bay.

George T. Egbert, Mariners Harbor.

Dr. Arthur Hollick, for the Committee on Constitution and By-Laws, submitted a preliminary draft of proposed provisions to be included in the same. These were read, discussed, amended and referred back to the committee for revision and formal drafting.

The Chairman, as president *pro tem.* was authorized and requested to take such action on behalf of the Association as he might deem advisable under Section 7 of the Act of Incorporation.

The Treasurer *pro tem.* was authorized to have made a corporate seal, circular in shape, with the name "Staten Island Association of Arts and Sciences" surrounding the date of incorporation.

The Secretary was instructed to issue notices in due time for a regular meeting of the Association on the third Saturday evening in October, 1905.

The meeting then adjourned.

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REGULAR MEETING.

SATURDAY, OCTOBER 21ST, 1905.

The meeting was held at the residence of Mr. Read Benedict, West New Brighton.

Twenty-nine members were present.

In the absence of the President Mr. Benedict was elected chairman *pro tem.*

The minutes of the special meeting of June 3d were read and approved.

The following were elected to active membership:

Dr. Louis B. Baker, New Brighton.

James P. Griffin, New Brighton.

Rev. James C. Howard, Stapleton.

Thomas O. Lowe, Tompkinsville.

John W. Wiseman, West New Brighton.

The President, Mr. Howard R. Bayne arrived, and the Chairman *pro tem.* vacated the chair.

Some question having arisen in regard to the status of the temporary officers elected at the special meeting held on June 3d, the following resolution was adopted:

Resolved: that the temporary officers elected on June 3d, 1905, be and they are hereby declared to be the permanent officers of the Association until such time as their successors are elected in accordance with the provisions of any constitution or by-laws that may hereafter be adopted.

The following additional officers were elected:

First Vice-President—William T. Davis.

Second Vice-President—William H. Mitchill.

Corresponding Secretary—Dr. Philip Dowell.

Dr. Arthur Hollick, for the Committee on Constitution and By-Laws, submitted revised copies of the same. The several provisions were read and discussed separately, amended in certain particulars, and adopted under the following resolution:

Resolved: that the Constitution and By-Laws prepared by the committee and amended at this meeting of the Association be and they are hereby adopted, together with such verbal or grammatical changes as the committee may deem advisable for clearness of expression in the final drafting of the same.

Mr. James Chapin exhibited a living specimen of the Jumping Mouse (*Zapus Hudsonius* Zim.) and read the following paper:

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Notes on a Captive Jumping Mouse.

On August 20th, 1905, while Mr. William T. Davis and I were walking through the woods behind the Moravian Cemetery, at New Dorp, something started to hop away through the plants in front of us. I paid no attention to it, supposing that it was a wood frog, of which we saw very many on that day; but Mr. Davis suspected from its persistent jumping, although it did not clear the tops of low plants in the usual manner, that it might be a jumping mouse. We gave chase and finally succeeded in catching and transferring it to a botanical box. It proved to be a female. Since then I have kept it in a glass tank with a covering of wire netting. I filled the bottom with sand, and put in some twigs and leaves, from which the mouse constructed a sort of nest. Here it sleeps in the daytime, for it feeds entirely at night. I found that it would eat apple, acorns and bread but preferred banana and chestnuts, so banana has been her principal food. After having had the mouse a few days, Mr. H. Lang, of the American Museum of Natural History, took several photographs of her in a box of sticks and leaves. He had great difficulty in keeping the mouse from running down off the sticks to hide in the leaves, but although the box was open on the top and one side she did not attempt to get out. The ordinary way of moving about seems to be by means of short hops, long jumps being made only in case of pursuit or other necessity.

Two other specimens have been exhibited before the Natural Science Association (*Proc. Nat. Sci. Assn. S. I.*, Dec. 12th, 1885, and May 8th, 1897), neither of which I believe was living. It is probably not uncommon on Staten Island but is not often seen because of its nocturnal habits. It stores up food for winter use but sometimes becomes perfectly torpid at that season. Its long tail is said to enable it to keep its balance while making its wonderful leaps, which sometimes exceed eight feet in length.

Specimens Exhibited.

Geological material from recent excavations at Smoking Point, near Rossville, presented by Mr. Ira K. Morris, were shown and commented upon by Dr. Arthur Hollick. The material included pieces of crystallized pyrite and lignite, evidently of Cretaceous age. The latter specimen showed well-defined traces of amber in the interstices.

Mr. William T. Davis exhibited a mass of "hard pan," consisting of finely consolidated bowlder clay and pebbles, presented by Mr. Samuel R. Brick, Jr., by whom it was collected at the site of Public School No. 16, on Monroe Avenue, Tompkinsville, at a depth of about twelve feet below the street level.

The meeting then adjourned.

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REGULAR MEETING.

SATURDAY, NOVEMBER 18TH, 1905.

The meeting was held at the Staten Island Academy.

President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the meeting of October 21st were read and approved.

Mr. Ira K. Morris presented two old time-tables issued in 1819, together with the following paper, which was read by the Secretary:

THE OLD FERRY AND COACH ROUTES BETWEEN NEW YORK AND PHILADELPHIA, VIA STATEN ISLAND.

For a period of several years following the close of the War of 1812 —say up to the time of the awful financial panics that came with the commencement of the '30's—there was great activity in public improvements throughout the country, but most especially along the line of Boston, New York, Philadelphia, Baltimore and Washington.

Among the most interesting of the relics of those old days which have come into my possession are two time-tables that give us a very clear idea of how the people traveled at that time. They read as follows:

OLD UNION LINE
FOR PHILADELPHIA.

Via New-Brunswick, Princeton, Trenton & Bristol.

Fare Through, $5.

The Vice-President's Steamboat Nautilus will leave New York every day (Sundays excepted) from Whitehall Wharf,

At 11 A. M.

for Staten Island. From here the passengers will be received without delay into the superior fast sailing Steamboat Bellona, Captain Cornelius Vanderbilt, for Brunswick; from thence in Post Chaises to Trenton, where they lodge, and arrive next morning at 10 o'clock in Philadelphia with the commodious and fast-sailing Steamboat Philadelphia, Captain Jenkins, in time to take the Old Union Line Baltimore Steamboat, which leaves at 12 o'clock every day.

For seats, apply at No. 145 Broadway; No. 5 Courtlandt st., 2d office from Broadway; at the Steamboat Hotel, corner of Washington and

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Marketfield sts.; at Messrs. J. & C. Seguine's, Whitehall; or Capt. De Forest, on board Steamboat Nautilus.

N. B. This line arrives in Brunswick three quarters of an hour before the Olive Branch Line.

JAMES GUYON, jun. } Proprietors,
CALEB T. WARD, } New-York.
ROBERT LETSON, New-Brunswick.
JOHN JOLINE, } Princeton.
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DAVID BRENTON, }

July, 1819. E. W. MILLS, Agent for Proprietors.

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The Vice-President alluded to was Daniel D. Tompkins, who came to reside on Staten Island shortly after the War of 1812. At the time of the establishment of both of the above-mentioned lines of travel he projected the Richmond Turnpike, which runs from the Quarantine (Tompkinsville), across Staten Island and through the little villages of Castleton Corners, Bull's Head and Travisville to the New Blazing Star Ferry (Linoleumville). I have in my possession a letter written by Governor Tompkins to Major James Guyon, Jr., (the great-grandfather of Dr. Frederick E. Clark of New Brighton), giving specific orders as to grades, materials, etc. In a postscript the Governor reminds Mr. Guyon that he has appointed him major of artillery in the New York militia.

Richmond Turnpike was the through thoroughfare over which the famous overland stagecoaches used to rumble in the so-called rapid transit of a century ago. Richmond Turnpike was chartered by act of the Legislature on March 31st, 1815, being Chapter 122 of the 38th session of the New York Legislature, entitled "An Act to incorporate the Richmond Turnpike Company;" this act then provides for the opening of the road through Castleton down to the Sound, and for commissioners, etc.; also, act dated January 21st, 1817, entitled "An Act to amend the act to incorporate the Richmond Turnpike Company," which simply refers to the building of certain portions of the road; also, an act of April 1st, 1824, entitled "An Act to incorporate the President and Directors, Company of the Fulton Bank in the City of New York." The eleventh section provides that this banking company, known as the Fulton Bank, is to be incorporated upon condition that there is to be contributed to the capital stock of the bank the capital stock of the Richmond Turnpike Company, and that the Richmond Turnpike Company is to cease in twenty years after April 1st, 1824; and that ended the existence of the Turnpike Company in the year 1844.

The famous thoroughfare was allowed to go to wreck and ruin in time, and portions of it became unsafe for travel even in the daylight. It became more and more dangerous until the era of good roads redeemed it from end to end. The last of the old milestones that used to guide the people in the old days was secured by the Natural Science Association in 1890 and is now safely housed in our museum. (*Proc. Nat. Sci. Assn. S. I.*, Feb. 13th, 1890).

The ferry at Blazing Star was one of the best up-to-date institutions of its class in the country. An advertisement in the *Richmond* [Staten Island] *Republican*, in 1827, tells in glowing terms of the new ferry-boat employed at that point being propelled by horse-power,—one horse at that! Also, that its enterprising proprietor intended to "keep

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right up to the times to show his keen appreciation of the demands of the traveling public." It contained a treading-machine for the horse to work in, and was propelled by side wheels.

Governor Tompkins met with very formidable opposition in his line of boats and stages, by Thomas Gibbons, of Elizabethtown, who ran a boat that became quite famous and was known as the "Mouse of the Mountain." Gibbons named the boat thus because Governor Tompkins, in speaking of the opposition line, said that "the mountain had labored and brought forth a mouse!" Gibbons, however, had too much money at his command for the Governor, who was crippled financially in consequence of expenditures of his personal property in the War of 1812, and the latter died before his plans were fully matured.

During the excitement, which was intense, Gibbons invited a number of public men to dine with him at Nautilus Hall, Tompkinsville, among whom was the Rev. Dr. Van Pelt, pastor of the Port Richmond Reformed Church. Mr. Gibbons incidentally remarked that he wanted to get a good, reliable man to take charge of his boat. Dr. Van Pelt replied that he knew of a young man who he thought would just suit him.

"Who is he?" asked Gibbons.

"Cornelius Vanderbilt," replied the Doctor.

On the following day young Vanderbilt was engaged, and the future millionaire proved true to his trust.

Some time in the latter '40's George Law and his associates became successors of the Richmond Turnpike Company, and they held an interest in it up to about twenty-five years ago. The ferry at Linoleumville has been long since closed, and the tides and time have long since removed the last vestige of the roadway to the water's edge.

Mr. Morris also presented the original "Assignment of Lease by William S. Pendleton and others to The North Shore Staten Island Ferry Company, Dated 22nd Novr., 1862."

Mr. William T. Davis read the following paper:

Location of Lake's Island.

In "Staten Island Names, Ye Olde Names and Nicknames" (*Proc. Nat. Sci. Assn. S. I.*, Vol. v. No. 5, Special No. 21, Mch. 14th, 1896), Lake's Island is referred to, on p. 37, as "the rise in the meadow to the east of Burnt or Dead Man's Island * * * "

Some of the more recent maps of Staten Island, such as the "Atlas of the Borough of Richmond, City of New York. E. Robinson & Co., 1898," and "Map of The Borough of Richmond, Staten Island, New York. Interstate Map Company, Engravers & Publishers, Newark.

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N. J., Copyright, 1904," apply the name "Lake's Island," erroneously, I think, to the island of salt meadow at the mouth of Fresh Kill. Mr. E. Brennan, who resides in the old stone house on what I believe to be the true Lake's Island, and whose family has owned the place since 1847, has informed me that in the deed of that date it is called Simonson's Island, but that he has always heard it called Lake's Island by the neighbors.

It is interesting in this connection to recall that Thoreau, in a letter written on Staten Island, on the 21st of July, 1843, says: "Last Sunday I walked over to Lake Island Farm, eight or nine miles from here, where Moses Pritchard lived, and found the present occupant, one Mr. Davenport, formerly from Massachusetts, with three or four men to help him, raising sweet potatoes and tomatoes by the acre. It seemed a cool and pleasant retreat, but a hungry soil. As I was coming away, I took my toll out of the soil in the shape of arrow-heads, which may after all be the surest crop, certainly not affected by drought." Arrow-heads, "the surest crop," are still to be found on the sandy dune as they were in Thoreau's day.

I have questioned Mr. Brennan about Mr. Davenport, and he remembers hearing the family mention his name, so there appears to be but little doubt that Lake's Island is the same place as the "Lake Island Farm" of Thoreau. It is also perfectly plain that tomatoes and sweet potatoes could not be raised on the salt meadow island at the mouth of Fresh Kill. From all of these facts it seems as if the makers of Robinson's Atlas and the "Map of the Borough of Richmond," were in error in calling the island at the mouth of Fresh Kill Lake's Island; they should have called it Burnt Island or by its equally old name Island of Meadow.

SPECIMENS EXHIBITED.

Mr. Davis exhibited rock specimens, and read the following note:

Last August it was found necessary to blast the rock under water at the site of the new ferry slip at St George. Application for specimens was made at the engineer's office, and our fellow member, Mr. Charles E. Trout, kindly furnished those now presented. The rock is a mica schist, like much of that on Manhattan Island. It contains garnets, and in this instance there was encountered a large seam or vein of quartz.

For comparison I have also included a specimen of mica schist collected in November, 1904, from the extreme southern end of the subway excavation at the foot of Whitehall street, near the Manhattan terminus of the ferry.

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Dr. Arthur Hollick exhibited specimens of the butternut and read the following note:

Several trees of the butternut (*Juglans cinerea* L.) were recently discovered along the course of the brook which flows near the western boundary of Prohibition Park and forms one of the branches of Palmer's Run.

The occurence of other trees was noted by Mr. William T. Davis in the vicinity of Sandy Brook, Pleasant Plains (*Proc. Nat. Sci. Assn. S. I.*, Ap. 11th, 1889), and near the Rossville Road (*Ibid.*, Oct. 10th, 1889); and Dr. Samuel Ackerly includes the species in a list of trees published in his "Supplement to the Agriculture of Richmond County" (*Trans. N. Y. State Agric. Soc.* 1843, p. 460). All these records, however, refer to trees in the southern part of the Island, so that the new locality is of interest on account of its apparent isolation. It is not improbable, however, that the butternut, like its near relative the black walnut, was formerly more common here than we now find it to be.

Mr. James Chapin exhibited living specimens of the western chipmunk of Wyoming, *Eutamias quadrivittatus* (Say), together with a skin of the eastern chipmunk in order to show the differences in marking and coloring between the two species.

The Secretary read the following reviews of

RECENT LITERATURE RELATING TO STATEN ISLAND.

I.—"The Origin of Certain Place Names in the United States" (second edition). Henry Gannett. *Bull. U. S. Geol. Survey* No. 258. Pamph., 8vo., pp. 334. Washington, D. C., 1905.

This is a revised edition of the work published under the same title in 1902 as *Bulletin* No. 197, and reviewed in the *Proceedings of the Natural Science Association of Staten Island* of Feb. 14th, 1903. The same criticisms made at that time are applicable now, except that it is still more difficult to understand how such obvious and readily accessible sources of information as are contained in the *Proceedings* could continue to be overlooked, especially as there was issued, since the publication of the previous review, Mr. Wm. T. Davis' "Supplement to Staten Island Names, etc." (*Proc. Nat. Sci. Assn. S. I.*, Vol. viii, No. 25, Special No. 23, Oct. 1903), and a complete file of the *Proceedings* is in the library of the Survey.

This naturally leads to the suspicion that the work has been prosecuted in a somewhat haphazard manner, although in the introduction the author says: "During the compilation of this work a large correspondence was carried on with State and local historical societies, State,

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county and township officers, and individuals in all parts of the country * * * "

Although the 8,900 or more names listed have been quite carefully scanned the only local ones noted as included are: Staten Island, Richmond County, Kreischerville, Rossville, Tompkinsville, and Ward's Point! How the above mentioned villages came to be selected, and others, such as Stapleton, Mariners Harbor, New Dorp, Linoleumville, Port Richmond, etc., were omitted, is not readily understood; and why only one topographic feature of the Island, represented by the relatively insignificant Ward's Point, should have been honored above all others, it would be interesting to learn.

Several Castletons, Middletowns, Northfields, and a Westfield are listed, but our old townships bearing those names are not included; while among other familiar local names, which however refer to villages or towns elsewhere in the United States, may be noted Clifton, Giffords, Graniteville, New Brighton, Pleasant Plains and St. George.—A. H.

II.—" Report of the New York Bay Pollution Commission to Hon. Frank Wayland Higgins, Governor, March 31, 1905." *State of New York, Senate Document* No. 39, May 1, 1905. Pamph., 8vo., pp. 135 and map. Albany, 1905.

This report, prepared by a commission of which our fellow member Mr. Louis L. Tribus was secretary, includes information that is of considerable economic importance to Staten Island. The proposition to discharge the sewage from an extensive territory in New Jersey by means of a large trunk sewer into the waters of New York Bay, about a mile north of Robbins' Reef lighthouse, was what lead to the appointment of the commission.

Of special interest to Staten Island is the increased pollution of the surrounding waters which would be certain to result and the increased danger of infection of the clam and oyster beds at Gravesend bay and along the south shore of our Island. Bacteriological examinations of water taken at points between the Battery, Coney Island and Raritan Bay, showed the presence of the colon bacillus (*Bacillus coli communis*) quite generally, and wherever this was found in the water it was also found that the shell-fish were similarly polluted. The facts in connection with these analyses and the conclusions derived from them may be found in Appendix 3, under the authorship of Commissioner Geo. A. Soper.

The general conclusion arrived at is that although the present pollution of our adjacent waters is appreciable and measurable, they would not be likely to be polluted to such an extent as to become dangerous

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for at least twenty-five years under the existing conditions. If however the proposed sewer system should be put through, it would at once increase the amount of house sewage and storm water drainage, which now enters the bay, by about 50 per cent. and would immediately become a serious menace to the healthfulness and attractiveness of the harbor and adjacent shores.

The "drinking" places, where oysters are kept for a limited time and fattened for the market, are condemned in the most unqualified manner. In regard to the well-known locality at the mouth of Lemon Creek at Princes Bay the report says: "Samples of water and oysters taken from the mouth of this stream have been shown by our analyses to be greatly polluted;" while in regard to another locality the report continues: "Another, and if possible, more dangerous "drinking" ground is situated at Tompkinsville, Staten Island. The stream which furnishes such fresh water as this place affords, flows from a thickly populated area of 2,960 acres. The sewage which is discharged into the Kill von Kull on both sides of this place, within a distance of three miles, exceeds 7,000,000 gallons per 24 hours." There is apparently some discrepancy here in regard to the last named locality being at Tompkinsville. It may be a misprint for Tottenville, or it might refer to some locality on the north shore of the Island.—A. H.

III.—"Report of the Staten Island Committee of the Municipal Art Society," Ernest Flagg, Chairman. *Bull. Municipal Art Soc. N. Y.*, No. 25. Sept., 1905.

This is an octavo leaflet publication of eight pages. The report, which is signed by the Chairman of the Committee, was apparently transmitted to the Society on September 10th and submitted to Borough President George Cromwell by the President of the Society on September 19th.

The report begins with a statement to the effect that "Since its appointment it [the Staten Island Committee] has given its undivided attention to the proposed new street system," and then follows a brief statement of familiar facts in regard to the Island's topographic features, and how they have been modified in many instances by commercial and government works. The necessity for considering a park system in connection with any comprehensive street system is touched upon, and the necessity for a broad general plan of main highways in advance of the details of minor street locations is urged. Special attention is called to the unsuitable location of St. George as a great traffic terminal on account of the topographic features, which require an ascent up

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hill and a descent down again in traveling to and fro in any direction, and a marginal street along the entire water front is suggested.

To the residents of Staten Island the report has the familiar ring of numerous other similar reports which have been made from time to time in the past by public officials and bodies and by committees of various associations or by public spirited individuals. Compared with some of these, however, the present report is exceedingly superficial and contains nothing, either in facts or conclusions, that has not been previously presented better elsewhere.—A. H.

IV.—In the British publication *Nature*, Vol. lxxii, May 11th, 1905, pp. 40, 41, may be found a note in relation to the Kreischerville amber, in which the facts are exaggerated in a most amusing manner, viz: "A discovery of the occurrence of this substance in large masses has been recently made in the Cretaceous deposits of Kreischerville, Staten Island, N. Y. The amber, which is being extensively worked for commercial purposes, occurs in a bed containing layers of vegetable debris * * * " etc.

This is a striking example of the well known fact that the importance of any discovery or incident is usually exaggerated in direct proportion to the distance from the point of origin, but it is somewhat strange that a dignified and presumably accurate scientific publication like *Nature* should not have taken the trouble to ascertain the facts and to state them correctly.—A. H.

The meeting then adjourned.

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REGULAR MEETING.

SATURDAY, DECEMBER 16TH, 1905.

The meeting was held at the residence of Mr. Howard R. Bayne, New Brighton.

President Howard R. Bayne in the chair.

Twenty members were present.

The minutes of the meeting of November 18th were read and approved.

The President gave a verbal report on the business transacted by the Board of Trustees since the last meeting of the Association.

Mr. William T. Davis exhibited specimens of pine and spruce cones, partially and completely denuded of scales by squirrels, and read the following paper:

NOTES ON THE RED SQUIRREL.

In the pine barrens of New Jersey, at Lakehurst, there are no nut trees, and the red squirrels that inhabit the woods do not likely know the taste of hickory nuts or chestnuts. The "Chickaree" is, however, a general feeder, eating a great variety of seeds, buds, fungi, fruit, insects, birds' eggs, etc., and in the pine barrens he finds many things to his liking. There is also one kind of food ever handy in winter, namely the cones of the pines, containing the rather small seeds. Thoreau says of the task of opening these cones: "If you would be convinced how differently armed the squirrel is naturally for dealing with pitch pine cones, just try to get one open with your teeth. He who extracts the seeds from a single closed cone, with the aid of a knife, will be constrained to confess that the squirrel earns his dinner. He has the key to this conical and spiny chest of many apartments. He sits on a post vibrating his tail, and twirls it as a plaything." Thoreau has a still more pleasing account of this proceeding, under date of Feb. 21, 1861, to be found in the volume entitled "Winter."

Small heaps of these dismembered pine cones are to be found quite often at Lakehurst, usually at the base of some pine tree, but last spring a remarkable collection was discovered from which the material exhibited was secured. The squirrel had selected a pitch pine bearing many cones containing good seeds and had bitten off the small limbs to which the cones were attached so that they fell to the ground. Then the cones were removed from the branches and carried to the base of

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the tree and opened. The ground beneath the pine tree was strewn so thickly with the branches that it had a green appearance, and at the base of the tree there was about half a bushel of cone remains.

Squirrels eat the seeds not only of our native pines, but they also open the long cones of the Norway spruce. Mr. Alanson Skinner and I found some of these cones at Ramapo, N. Y., in April, 1904. When the scales have been removed by the squirrels the spiral arrangement is much better shown in these cones than in those of the pitch pine.

In many localities red squirrels are extremely self assertive and may be seen and heard almost constantly, but in the pine barrens about Lakehurst I have seen but few, and they act quite differently. Here on Staten Island we have no wild red squirrels, although gray squirrels are fairly numerous. The red squirrel is also said not to occur on Long Island.

In "American Animals," by Witmer Stone and Wm. E. Cram, published in 1902, occurs the following: "But as early as July, while the young squirrels have still to be watched over and looked after, the industrious red squirrels begin cutting off the green cones of the white pine and work early and late burying them, half a dozen in a place, under the pine needles, to be dug up in the winter and early spring, and opened for the seeds they contain." The young of red squirrels, and of our other species, are often born much later than July, as was pointed out in the *Proceedings of the Natural Science Association of Staten Island* of January 9th, 1886,—that is to say, our native squirrels have often both spring and fall or late summer broods of young.

Mr. Davis also explained and demonstrated a simple and practical method of temporarily binding pamphlets and read the following note:

A PRACTICAL METHOD OF TYING PAMPHLETS IN BUNDLES.

With the month of December most of the botanical, entomological and other natural history journals end their volumes for the current year, and it becomes necessary to tie the separate numbers together until such time as they can be sent to the binder. Many of the journals are of but few pages, and several years are usually bound together in a single volume. Meanwhile it often becomes necessary to consult a particular article, and when tied together in the usual way the numbers are not conveniently reached. It may be found, however, that twelve numbers of the *Canadian Entomologist*, for instance, can be securely tied together by winding a fine strong string four times about them

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lengthwise, just inside the staples with which the pages are secured. While the volume will of course not lie open, it can nevertheless be easily consulted without untying the string. This method has been followed by Mr. Louis H. Joutel for several years, and I have also found it most practical and convenient.

Dr. Arthur Hollick exhibited specimens of Triassic sandstone and read the following paper:

A NEWLY DISCOVERED OUTCROP OF TRIASSIC ROCK ON STATEN ISLAND.

During the prosecution of recent investigations on the geology of the Island in the vicinity of Kreischerville I accidentally discovered a hitherto unreported outcrop of Triassic rock, on the east side of Sand Lane, near Bogardus' Corners. The outcrop is well defined, and I ascertained by inquiry that it had been worked as a quarry by the Kreischers some years ago, in order to obtain material for mixing with fire clay in the manufacture of mottled brick for ornamental building purposes. I was informed that about one hundred tons of the rock had been taken from this outcrop.

The rock is red shaly sandstone, thinly bedded, and presenting evidence of having been squeezed or crushed, probably by ice action. Its presence at this location, at an elevation of about 140 feet above tide, is somewhat remarkable; and its discovery was entirely unexpected, as it indicates that the topography of the region is not wholly due, as was formerly supposed, to eroded Cretaceous strata and Drift deposits, but that it is due, at least in part, to "bosses" or ridges of older rock.

That Triassic rock underlies the Cretaceous clays of Staten Island and New Jersey at lower levels, has long been known, but its occurrence as an "inlier," surrounded by Cretaceous deposits, was an unlooked-for feature and materially adds to our knowledge of the extent and location of the formation on the Island and the amount of erosion to which it was subjected before the Cretaceous deposits were laid down.

Previous visible evidence in regard to the local presence of rocks of Triassic age has been confined to the trap ridge, extending from Port Richmond to Linoleumville, and the adjacent area to the northwest, in the vicinity of Mariners' Harbor and Arlington. The outcrop in this region was first noted and described in 1843 by Mr. Wm. W. Mather (Geol. N. Y., Pt. I. Geol. 1st Geol. Dist., Chap. iv, Upper Secondary System, Redsandstone Division, p. 285), where he says: "In Richmond county (Staten island) the red sandstone occupies but a

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small area where it can be observed; but from the observations made by Prof. H. D. Rodgers and myself, it is believed to range from between Bergen point and Shooter's island, south-southwestwardly, to the Freshkill marshes. It is generally covered by soil, drift deposits, and the sand and clay beds. It may be seen at very low tide, on the shore, about southwest of Bergen Point. It is the slaty, micaceous, fissile, red sandstone and shale."

On p. 294 he mentions "the tracks of birds and animals found on the sandstone in quarrying [in the Connecticut River valley]" and remarks, in a footnote: "I have seen no tracks on the red sandstone of Rockland and Richmond counties, but they may very possibly be found there."

A visit to the locality mentioned by Mr. Mather on the shore at Mariners' Harbor, was made by me in 1889 and described in the *Proceedings of the Natural Science Association of Staten Island* for April 11th of that year. Since then the growth of the community has obliterated all traces of the outcrop at that time exposed, but we have specimens from it in our collection.

Shortly afterwards Triassic shale was found exposed in the railroad cutting just beyond Arlington station, and the discovery was recorded in the *Proceedings* of Oct. 10th, 1889. The same rock is also known to be near the surface at other localities in the vicinity, as evidenced by the fact that it was struck in a well boring at the Elizabethport ferry landing, near Old Place, at a depth of 45 ft., as noted by Mr. Wm. T. Davis in the *Proceedings* of June 12th, 1897.

Bowlders, pebbles, and finer particles of Triassic sandstone and shale are the commonest constituents of our Drift deposits, giving to them the prevailing red color which characterizes most of the surface soil of the Island, but this material was almost entirely derived from the New Jersey outcrops. Some of our finest specimens of glaciated bowlders and pebbles are of this kind of rock.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"The Normal Distribution of Chlorine in the Natural Waters of New York and New England." Daniel D. Jackson. *U. S. Geol. Surv., Water-Supply and Irrigation Paper* No. 144. Pamph., 8vo. pp. 31, pls. i-v. Washington, D. C., 1905.

This contribution deals especially with the normal amount of chlorine in the reservoir, pond, lake, stream, well and spring waters of the region.

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If the waters affected by the salt deposits in the western part of New York State be disregarded, it has been found that in the coast States the chlorine in the natural waters is practically all brought in by the sea winds and that the amount constantly diminishes as the distance from the coast increases. By connecting the localities where analyses of the waters show equal amounts of chlorine a series of isochlors are established, which on a map of the region are indicated by a series of lines, roughly following the contours of the coast line and located further and further apart as the distance from the coast line increases. When we know in this way the normal amount of chlorine which should be present in the water at any locality, any excess which may be found is a clear indication of some local conditions which cause the excess, and the identification of such local conditions is often of the highest importance, for the reason that an excess of chlorine may mean organic pollution of the water and be an indication that it is unfit for domestic purposes.

The mere presence of an excess of chlorine, however, does not necessarily indicate such pollution but may be due to the presence of natural salt deposits in the ground or to seepage from the ocean, so that each locality should be made the subject of an independent investigation.

By consulting the isochlor map of New York (pl. v) it may be seen that Staten Island is located within isochlor 6.0, or in other words that the normal amount of chlorine in our natural waters should be six parts per million. On page 30 are given the results obtained from analyses of several Staten Island waters, as follows:

"Clifton, water supply..... 6.0
Richmond Turnpike station, Crystal Water Supply Company 6.2
Stapleton, water supply..... 6.0
Tottenville, water supply..... 6.0"

These results are of interest as indicating that so far as the water from these sources of supply is concerned the amount of chlorine present is normal or so slightly in excess that the excess may be disregarded.

It is unfortunate that analyses of the water from the Staten Island Water Supply Co. were not included, as these would have afforded interesting comparisons. We are, however, able to quote several from other previous reports, a number of which have been given in papers read before the Natural Science Association of Staten Island from time to time and printed in the *Proceedings*, Vol. iv, Feb. 9, 1895, p. 61; Vol. viii, Dec. 13, 1902, p. 45. From the above mentioned sources of information the following data have been abstracted:

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Staten Island Water Supply Co.: Chlorine, parts per million.

Sample taken June 30, 1883	Sample taken Oct., 1893	Sample taken Nov. 19, 1902
8.79	13.05	392.00

These analyses show not only such an astonishing excess over the normal but also such a progressive increase in the actual amount of the chlorine that some local source of contamination is evident. This is probably due to the location of the wells near tide water, at the West New Brighton pumping station, as previously suggested in the papers quoted.

It may also be pertinent to recall that analyses of the Crystal Water Co's. supply and that of Tottenville, given in the same papers, show a larger amount of chlorine than those given in the work under review; and as the former were made in the Municipal laboratory they may be regarded as authoritative.

Finally we may incidentally recall the results of analyses of Silver Lake water, recorded in the *Proceedings* of February 13th, 1904, as follows:

Sample collected	July 17, 1903.	Chlorine,	parts	per	million		12.425
" "	Nov. 20, "	"	"	"	"	"	8.000
" "	Dec. 7, "	"	"	"	"	"	8.000

In this case the indicated contamination can not be due to salt water seepage but must be regarded as evidence of organic pollution, due to nearby habitations.

This work is of great local interest and importance, as it provides us with an official standard, with which our local waters may be compared and from which definite conclusions in regard to them may be deduced. It also comes at a peculiarly opportune time, when we are discussing and planning for an increase of our public water supply system.—A. H.

NOTES AND COMMENTS.

Rev. Arthur H. Allen remarked on a colony of English starlings inhabiting the steeple of the Reformed Church on Tompkins Ave., Tompkinsville. The identity of these birds is not generally recognized, and they are popularly referred to as robins, blackbirds, etc.

Dr. Hollick referred to a paper on other local colonies of the birds by Mr. W. P. Heineken, in the *Proceedings* of February 12th, 1898.

Mr. James Chapin read extracts from a paper by Miss M. Cline, en-

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titled "The Principles of Bird Flight," recently presented before the New York Academy of Sciences, and commented upon some of the curious statements of facts and the remarkable theories advanced in it. The paper is printed for private circulation as an octavo pamphlet of fifteen pages, with a portrait of the authoress, and bears the imprint of the Free Press Publishing Co. of Easton, Pa.

The meeting then adjourned.

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PUBLICATIONS OF THE ASSOCIATION.

It is planned to issue these Proceedings in parts, according as material for publication is available, and to make four parts constitute a volume. They are the continuation of the Proceedings of the Natural Science Association of Staten Island, which were published consecutively from November 10th, 1883, to June 3d, 1905, and were included in nine volumes, separately indexed, as follows:

Volume I, pp. 74, Nov. 10th, 1883—Oct. 13th, 1888.
" II, " 87, Nov 10th, 1888—Oct. 10th, 1891.
" III, " 67, Nov. 14th, 1891—Oct. 14th, 1893.
" IV, " 86, Nov. 11th, 1893—Oct. 12th, 1895.
" V, " 97, Nov. 9th, 1895—Oct. 10th, 1896.
" VI, " 64, Nov. 14th, 1896—Oct. 8th, 1898.
" VII, " 79, Nov. 12th, 1898—Oct. 13th, 1900.
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Special No. 21, Vol. v, No. 5, Mch. 14th, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. vii, No. 15, Mch. 10th, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jun'r. Pamph., pp. 33, pls. i-iv.

Special No. 23. Vol. viii, No. 25, Oct. 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

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Staten Island Association of Arts and Sciences,
New Brighton, N. Y.

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VOL. I. January-May, 1906. PART II.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,

PUBLICATION COMMITTEE.

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NEW BRIGHTON, N. Y.

[Issued July 9, 1906.]

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

Vol. I. January-May, 1906. Part II.

REGULAR MEETING.

JANUARY 20TH, 1906.

The meeting was held at the residence of Mr. Lester W. Clark, Sr., New Brighton.

President Howard R. Bayne in the chair.

Twenty-six members were present.

The minutes of the meeting of December 16th, 1906, were read and approved.

The following were elected to active membership:
Thomas A. Braniff, Tompkinsville.
Timothy F. Donovan, West New Brighton.
Richard Fair, Stapleton.

Dr. Arthur Hollick exhibited specimens of charred wood, lignite, and amber, from the Cretaceous deposits at Kreischerville, and read the following papers:

A FOSSIL FOREST FIRE.

At our meeting of January 21st, 1905, in a paper entitled "Additional Notes on the Occurrence of Amber at Kreischerville" (*Proc. Nat. Sci. Assn. S. I.*, vol. ix, 1905, pp. 35, 36), I referred briefly to the presence of charred wood, associated with the lignites and amber, in the following words: "Another exceedingly intereresting phenomenon is

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the occurrence of charred wood * * * evidently produced by the direct effect of fire * * *. As man was not in existence at that period in the earth's history the origin of the fire must have been due to some natural agency, and as there is no indication of volcanic disturbances we may assume, in the absence of any more likely theory, that it was due to lightning."

This explanation however was recognized as not entirely satisfactory, for the reason that charred wood is known to occur in deposits of approximately the same geologic age at other widely separated localities, and the theory would therefore imply that there was at that period either an unusual number of such fires from this cause, or else a single conflagration extending over an area of many hundreds of square miles.

The presence of charred wood in connection with the Cretaceous deposits of Maryland was incidentally mentioned by G. Troost in the early part of the last century, in an article entitled "Description of a Variety of Amber and of a Fossil Substance supposed to be the Nest of an Insect, discovered at Cape Sable, Magothy River, Anne Arundel County, Maryland" (*Am. Journ. Sci.*, vol. iii, 1821, pp. 8-15,) in which he says, on page 9: "This lignite seems to be formed of three varieties of wood, or rather the wood has undergone three different changes, some pieces of it being entirely charred."

I have here certain specimens collected at Kreischerville, which include large pieces of lignite charred on the outside only and other smaller fragments completely charred throughout. These latter occur in greatest abundance in connection with layers or seams of yellowish sandy clay. The prevailing colors of the Cretaceous sands and clays throughout this locality are white and gray, while the yellow layers are of quite limited extent and appear to have been burned or baked. It seems therefore reasonable to infer, from this association of materials, that the charred wood was not deposited with the clay in the condition of charred wood, but that it was fresh material at the time of deposition and was subsequently burned in place, thus baking the enclosing clay.

At the time when the material was discovered, and indeed until only a few days ago, no other probable cause of the fire than lightning had occurred to me; but in a recent article by D. P. Penhallow, entitled "A Blazing Beach" (*Science*, vol. xxii, Dec. 15, 1905, pp. 794-796), the author describes a phenomenon which supplies an explanation not only reasonable but probable and apparently conclusive. In order to thoroughly appreciate the significance of this article and its application to the Kreischerville material and environment it should be read *ver-*

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batim, but the following abstract includes the principal facts of interest in this connection:

On Friday evening, September 1st, 1905, flames were seen to arise from the surface of the beach and adjacent waters at Kittery Point, Maine. The flames rose to a height of about a foot and lasted about an hour. Incidentally an earthquake shock had been felt the day before. The conflagration was confined to that portion of the beach exposed at low water. Here the surface was found to be fine white sand to a depth of about an inch, below which was about six inches of sand filled with various kinds of organic debris, in regard to which the author says: "Moreover, this layer was perfectly black, and when washed it exhibited very small, carbonized fragments of *Zostera* [eel grass] and other marine plants, fragments of wood with a distinct surface charring, etc."

His explanation of the conflagration is that the decaying vegetation gave rise, as such material is well known to do in the marshes, to sulphuretted, carburetted and phosphuretted hydrogen gases. The earthquake jar of the previous day liberated these gases, which ignited by spontaneous combustion and started the conflagration, which continued until the gases were consumed.

Similar phenomena, under the names of "Will o' the wisp," "*ignis fatuus*," etc. are of not uncommon occurrence in marshy districts, where decaying vegetation has accumulated, and the author concludes with the suggestive remark "that the possibility of such combustion on a rather large scale offers a most reasonable explanation of many forest fires, the origin of which it has hitherto been impossible to account for in a satisfactory manner."

A careful study of the Kreischerville deposits indicates very clearly that the original conditions of deposition must have been strikingly similar to those described as existing at the Kittery Point beach. The layers of vegetable debris and sand, intercalated in the clays, are comparable to the sandy layer of black organic debris in the beach, and it is reasonable to infer that wherever such conditions prevail similar phenomena of combustion may occur.

INSECT BORINGS IN CRETACEOUS LIGNITE FROM KREISCHERVILLE.

Since I last reported on the Kreischerville lignites a large account of additional material has been collected, some specimens of which show the presence of insect borings. I did not feel certain in regard to the nature of these markings on the lignites, so the specimens were turned

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over to Mr. William T. Davis, who submitted them to Mr. L. H. Joutel of the American Museum of Natural History and to Mr. E. P. Felt, State Entomologist. They both agreed that the markings represented insect borings of some kind, but did not care to commit themselves any further.

Upon looking into the matter I soon ascertained that the literature relating to fossil insects is quite extensive, and that it would require considerable labor to ascertain whether it contains any reference to borings identical with ours, but those who are interested in the subject may find a popular article, signed "M. G.," entitled "Les Perforations des Bois Fossiles" in *La Nature*, vol. vi, 1878, p. 112, figs. 1-6, in which are illustrations of borings in fossil coniferous wood, by coleopterous insects regarded as probably belonging to the genera *Tomicus* or *Bostrichus*, some of which are not unlike our specimens. Mr. Samuel H. Scudder has also described several similar specimens from Canada. (*Cont. Canadian Palaeont.*, vol. ii[1], 1895, pp. 27-56, pls. ii, iii, and *Ibid.*, ii[2], 1900, pp. 67-92, pls. vi-xv). In the first mentioned contribution the author describes and figures a fragment of an elytron under the name *Hylobites cretaceus*, from the Pierre shales of northwest Manitoba, and says: "This is the second Cretaceous insect that has been discovered in North America, the first being a *Corydalites* [*S. secundus* Scud.] from the Laramie beds of Colorado." The former is a coleopterid, the latter a neuropterid.

We are not yet able to report what kind of an insect it was that made the borings in the Kreischerville lignites, but the rarity of any indications of Cretaceous insects in America causes the discovery to be of interest and worthy of record.

Incidentally it may also be mentioned that nearly all of the Kreischerville lignites thus far critically examined prove to he coniferous, and that most of the reported instances of fossil insect borings appear to be in wood of that class.

Mr. William T. Davis exhibited specimens of the Catalpa Sphinx and its caterpillars collected at Lakehurst, N. J., and read the following paper:

THE CATALPA SPHINX.

Since 1899 the Catalpa Sphinx moth (*Ceratomia catalpæ Bdv.*) has been reported from widely different parts of New Jersey, but as yet it has not been detected on Staten Island. The caterpillars are gregarious, and as the name indicates are to be found on *Catalpa* trees,

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which they often completely defoliate. Specimens were found last summer at Jamesburg, N. J., which is less than fifteen miles from the western end of our Island. Though found so widely distributed in New Jersey, it has not been discovered, as far as I am aware, nearer to the ocean than Lakehurst, where it has been plentiful for a number of years. It is hoped that if the insect be found on the Island the matter will be reported, as the spread of these species northward and eastward is of some interest. Several accounts of the Catalpa Sphinx by Prof. Smith are to be found in the reports of the Entomological Department of the New Jersey Agricultural College Experiment Station; and in *Entomological News* for October, 1905, Dr. Holland gives an interesting report upon the spread in recent years of this insect in southern Indiana and the damage it causes to *Catalpa* trees.

SPECIMENS EXHIBITED.

Mr. Stafford C. Edwards exhibited specimens of bird-nest fungi, collected on the Island, including the species *Granularia pulvinata* (Schw.) Kuntze and *Cyathus striatus* (Huds.) Hoffm.

Mr. Howard R. Bayne exhibited specimens of the stem of poison ivy (*Rhus radicans* L.), showing the aerial rootlets and eccentric position of the pith.

Mr. Leavitt C. Parsons presented a copy of the *Staten Islander* dated September 11th, 1847.

Mr. William H. Mitchill presented a fac simile copy of *Frank Leslie's Illustrated Newspaper* dated December 15th, 1855, containing a description and picture of Sailors Snug Harbor.

Mr. Alanson Skinner exhibited wampum, a wooden mask, a spirally feathered arrow shaft, and other Iroquois Indian relics, and commented upon the same.

NOTES AND COMMENTS.

Mr. William T. Davis remarked upon the recent agitation in connection with the proposed public tuberculosis hospital on the Island, and read an extract from Clute's "Annals of Staten Island," published in 1877, in which the climate of the Island is referred to as "celebrated for its salubrity, except for affections of the lungs and throat."

Mr. James Chapin stated that a number of individuals of the Great Northern Shrike (*Lanius borealis* Vieill.) had been recently seen on

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the Island and several specimens obtained. The only previous records in regard to the local occurrence of the species are by Dr. Arthur Hollick and Mr. William T. Davis in the *Proceedings of the Natural Science Association of Staten Island* of April 13th, 1901.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"The Production of Precious Stones in 1904." George F. Kunz. Pamph., 8vo., pp. 120. Washington, D. C., 1905. Extr. *Mineral Resources U. S.*, 1904. David T. Day, Chief, Divn. Mining and Mineral Resources, U. S. Geol. Surv.

On pp. 80-82, under the heading "Amber. New York," is an account of the Kreischerville amber discovery in 1904, together with a very full and accurate description of the conditions under which the amber occurs, its characters, the fossil plant remains found associated with it, and a brief account of the known occurrence of amber elsewhere in the eastern United States.

The author remarks that "Cretaceous amber is somewhat rare, and this occurrence is of much interest * * * The specimens obtained are in the museum of the New York Botanical Garden and also in that of the Staten Island Natural Science Association," and for the information of those who are not acquainted with the locality the following explicit description is given:

"Kreischerville, Staten Island (borough of Richmond, New York City) * * * is situated on the shore of Staten Island Sound or Arthur Kill, near the extreme southwestern end of the Island and distant about 2½ miles from Richmond Valley station on the Staten Island Railway, about 23 miles from New York city hall."

A somewhat peculiar circumstance which I am unable to understand or explain in connection with this pamphlet, is that although the title page designates it as "Extract from Mineral Resources of the United States, Calendar Year 1904," an examinatiou of the latter publication shows that the "Extract" is much more extended than the original, in which the amber article is condensed to a brief paragraph on p. 960.

—A. H.

The meeting then adjourned.

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REGULAR MEETING.

FEBRUARY 17TH, 1906.

The meeting was held at the residence of Mr. Montague Lessler, Tompkinsville.

President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the meeting of January 20, 1906, were read and approved.

Mr. Montague Lessler moved the following resolution, which was unanimously adopted:

Resolved: that the Staten Island Association of Arts and Sciences offer a prize of ten dollars annually for work in natural science, open only to pupils in the Curtis High School under such conditions as may be mutually agreed upon by the trustees of this Association and the authorities of the School.

The following were elected to active membership:

George Boynton, New Brighton.

Kintzing P. Emmons, New Brighton.

Gugy Æ Irving, New Brighton.

Louis J. Rabbage, Port Richmond.

Mr. William T. Davis exhibited specimens and read the following paper:

BOTANICAL NOTES.

Additions to the Local Flora.

Picea excelsa L. A number of seedling spruces have been found growing in the woods in various parts of our Island which appear to belong to this species. The oft repeated burning of the woods has, however, prevented the trees from attaining any considerable size. Specimens have been found on Richmond Hill, at two stations near Four Corners, and last year Dr. Philip Dowell and I found several on Ocean Terrace and one at Lyster Pond near Valley Forge.

Commelina communis L. This introduced plant is a troublesome

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weed in some shady gardens. It has been found at New Brighton, Clifton, Egbertville and Gifford's Lane.

Asclepias incarnata L. A single plant of this milkweed was found at Bull's Head last August.

New Localities.

Pinus Virginiana Mill. For many years a large pine of this species stood in the woods on the westerly side of the Todt Hill Road not far from Four Corners. It is now dead and only part of the trunk remains. On the opposite side of the road there is a living specimen of considerable size that has not heretofore been reported.

Quercus nana Marsh. A single specimen of this scrub oak was observed last September by Dr. Dowell, while we were examining the hybrid oaks at Richmond Valley, near to which it grows. The other known station for the species on our Island is at Watchogue.

Duchesnea Indica (Andr.) Focke. The Indian strawberry grows near the Amboy Road and Beach Ave., Richmond Valley.

Tilia Americana L. A number of young lindens stand in the woods on the easterly side of South Ave. near Lambert's Lane, Mariners Harbor.

Galium tinctorium L. This species of bedstraw was found near Richmond in June, 1900. It is probably the same as that listed in the local flora as "*Galium trifidum* L., var. *latifolium* Torr.—Clifton, S. I., 1870. (Wm. H. Leggett)."

Sericocarpus linifolius L. This white-topped aster has been reported from Watchogue and Richmond Valley. At Watchogue but one plant was found, and at Richmond Valley it was not abundant. On "Eygpt" Meadow Island back of Midland Beach it is, however, quite common.

Taraxacum erythrospermum Andrz. The red-seeded dandelion has been found in several places on the Island. In addition to the localities reported in the *Proceedings of the Natural Science Association* for February, 1902, it has been found on top of an outcrop of serpentine rock on the side of Richmond Hill, and on the 14th of last May Dr. Dowell and I discovered numerous plants near the old lane that leads to the Billopp House at Tottenville.

Mr. James Chapin exhibited stuffed specimens of the Ipswich sparrow and read the following paper:

OCCURRENCE OF THE IPSWICH SPARROW ON STATEN ISLAND.

The Ipswich sparrow *Passerculus princeps* Maynard is only

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known to breed on Sable Island, about 90 miles off the coast of Nova Scotia, but it winters southward along the Atlantic coast to Virginia and Georgia, thus including Staten Island in its winter range; although, so far as I am aware, its occurence here has not been heretofore reported.

On the beach between New Dorp and Great Kills I observed single individuals of this species on January 14th and February 11th and 22nd, 1905, and two, or possibly three others on February 12th, 1906. It appears therefore to occur quite regularly at this locality, and I should suppose it might also be found all along the strip of beach extending from South Beach to Great Kills, and possibly between Great Kills and Tottenville, although this is less likely.

SPECIMENS EXHIBITED.

Mr. William T. Davis exhibited a specimen of gneiss containing stilbite, obtained from the Manhattan end of the Brooklyn tunnel at the Battery and identified by Mr. Louis P. Gratacap.

Mr. Davis also exhibited a specimen of *Papilio troilus* L. and a crab spider. The *Papilio* was found dead with the living spider attached to it. The latter had probably caused the death of the former.

Mr. James Chapin exhibited photographs of the western chipmunk, *Eutamias quadrivittatus* (Say), from Medicine Bow, Wyoming, taken from the living specimens shown at the November meeting of the Association.

Mr. Alanson Skinner exhibited two grooved stone axes found at Chelsea and an arrow point from Mariners Harbor, where a few human bones, presumably of Indians, were also found.

Mr. Skinner also exhibited a photograph of an excavated Indian grave in Chautauqua Co.

Dr. Arthur Hollick exhibited a specimen of dolomite, obtained by Mr. Llewellyn W. Freeman in a street excavation in New Brighton, which at first was thought might have been in place where found, but which proved to be an old piece of masonry, as indicated by adhering particles of mortar.

Dr. Hollick also exhibited a piece of marble, transmitted by Mr. Ira K. Morris, which had been found associated with Cretaceous lignite and kaolin at Smoking Point, near Rossville, and which proved on careful examination to be a fragment of an artificially cut slab.

The Secretary read the following review of

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RECENT LITERATURE RELATING TO STATEN ISLAND.

In the New York *Evening Telegram* of February 17th, 1906, is an article entitled "Amber Found in Goodly Quantity," in which the amber deposits at Kreischerville are described. The article was apparently inspired by a recent brief paragraph by Dr. Arthur Hollick, entitled "Origin of the Amber Found on Staten Island," (*Journ. N. Y. Bot. Gard.*, vol. vii, pp. 11, 12. 1906), which includes a statement to the effect that some of the Kreischerville lignites had been examined microscopically and identified as belonging to the genera *Sequoia* and *Araucarioxylon*.—A. H.

The meeting then adjourned.

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REGULAR MEETING.

MARCH 17th, 1906.

The meeting was held at the residence of Mr. William H. Mitchill, Port Richmond.

President Howard R. Bayne in the chair.

Eighteen members were present.

The minutes of the meeting of February 17th, 1906, were read and approved.

The Secretary called attention to a recently issued circular signed by the local secretary of the American Association for the Advancement of Science, announcing that the next meeting of the association would be held in New York during the last week in December, 1906, and the first week in January, 1907, and stated that further reference to the subject would be made and some action suggested in due time.

Dr. Philip Dowell, for the publication committee, reported that the pamphlet containing the History, Act of Incorporation, Constitution and By-Laws, list of members, etc., had been printed in accordance with instructions, and that it was ready for distribution.

The following was elected to active membership:
William A. Crane, Stapleton.

Dr. Arthur Hollick exhibited a specimen of soapstone rock, containing well-defined octahedral crystals of magnetite and read the following paper:

A SOAPSTONE DRIFT BOWLDER CONTAINING MAGNETITE.

This specimen was found by Mr. William T. Davis near Gifford's Lane, and it probably represents a fragment transported by glacial action from the outcrops on or just to the north of Richmond Hill. Transported fragments and bowlders of red jasperoid limonite are conspicuous in the same locality where the specimen was found, and these were certainly derived from the Richmond Hill region, where the limonite is in place.

Thus far we have not found any magnetite as well defined as these crystals are in any of our soapstone outcrops, but in very fine particles it is a well known constituent of the rock at many localities. Some of this iron ore is known to contain chromium and has been listed as chromite, a quite large fragment of which, found on Ward's Hill, Tompkinsville, was shown at our meeting on December 9th, 1893,

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(*Proc.* vol. iv, p. 7), and is now in our museum.

In connection with this subject, the following note on p. 401 of the Mineralogy of New York, by Lewis C. Beck (Natural History of New York, Part iii, Albany, 1842), is of interest:

"CHROME-IRON ORE * * * Richmond County. Octahedral crystals of this mineral have long been credited to the serpentine at the Quarantine and elsewhere in this county. It is probable that they have sometimes been nothing more than magnetic iron ore."

Mr. William T. Davis exhibited specimens of fresh water sponges and read the following paper:

FRESH WATER SPONGES FROM A POND NEAR RICHMOND.

On the 18th of February, Mr. James Chapin and I found a great many sponges in a swamp or shallow pond near Richmond. The water had been low before the pond was frozen over, and consequently the sponges were above the ice on the twigs and prostrate branches that had been submerged last summer. We saw about fifty of the dried sponge masses, and from those exhibited it may be seen that some are of considerable size. About three inches long and an inch and one-half in diameter seemed to be the average dimensions.

Some rather large gray sponges, probably of the same species, were found several years ago in Martling's pond in the Clove Valley, and with Mr. Thomas Craig and Mr. Frederick F. Hunt we collected what were probably two species in a small pond near Gifford's Lane at Green Ridge. Sponges have also been found in Silver Lake, and indeed may be discovered in most any of our ponds, but not in such abundance as in the little pond near Richmond.

Mr. Davis and Mr. James Chapin exhibited several shell pellets and submitted the following account of their occurrence:

SHELL PELLETS FOUND ON THE BEACH NEAR OAKWOOD.

On the 12th of last February, we found on the beach near Oakwood a number of pellets, consisting of broken clam and mussel shells, which had apparently been disgorged by some birds after the manner in which owls disgorge pellets. Herring gulls rose in numbers near the place where the pellets were found, and we also saw several ducks in the vicinity. The pellets have been shown to several well known ornithologists, but they have been unable to say what bird produced them, and the matter

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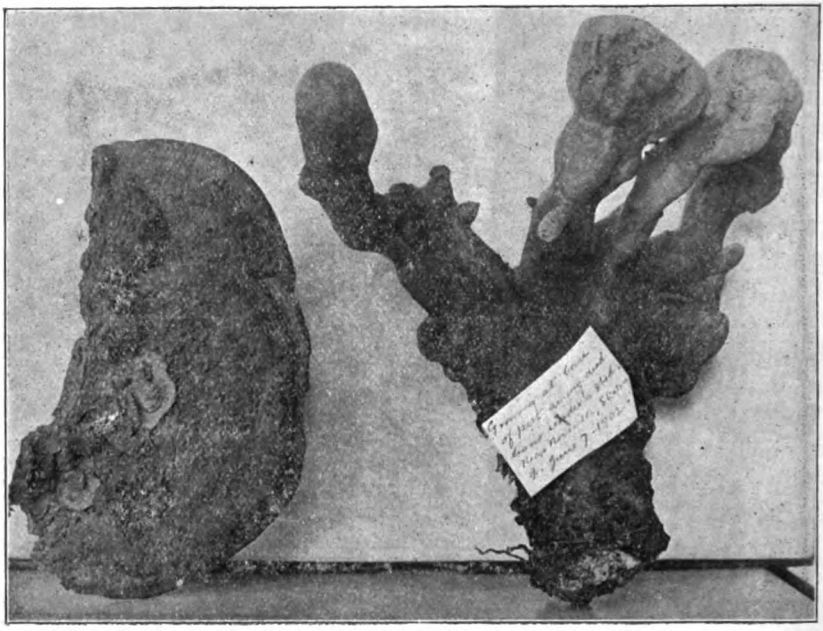

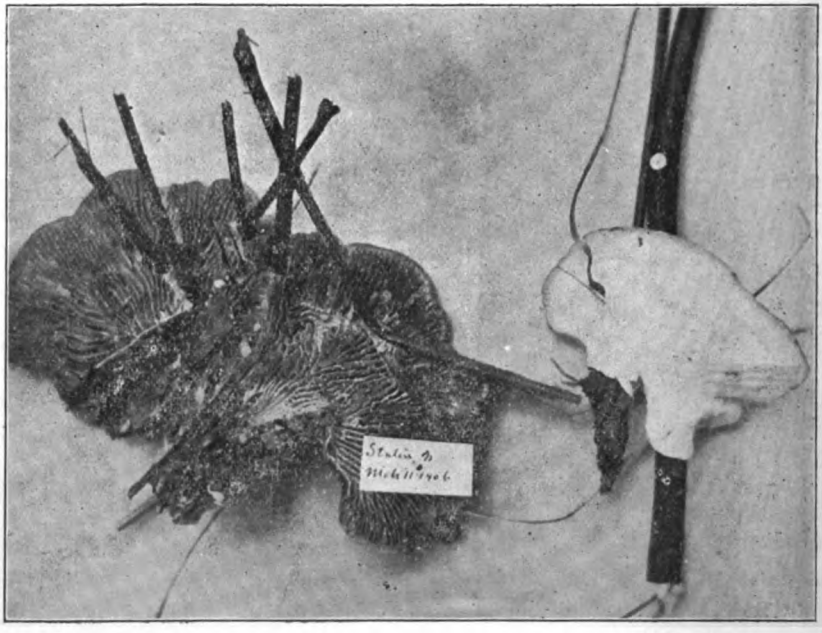

Fungi enclosing various objects.—Edwards (p. 33).

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therefore has some interest. The pellets are about the size of English walnuts and break easily when handled. Some of them are composed wholly of soft-clam shells, one or two unbroken shells being occasionally included at one end. These, of course, may have adhered when the pellets were first cast upon the beach, though that does not appear to have been the case. The little soft-clam (*Mya arenaria* Linn.), about one-half inch long and containing the dead animals, were exceedingly numerous at the last high tide marks on the day of our visit. The other pellets found were composed of about equal parts of broken mussel shells (*Mytilus edulis* Linn.) and broken soft-clam shells, which combination gave them a mottled appearance.

The specimens of pellets exhibited intact have been soaked in shellac, which accounts for their yellow color.

As several specimens of the surf scoter duck, *Oidemia perspicillata* (Linn.), were seen in the vicinity at the time the pellets were found, it is possible that these birds may have been responsible for them.

SPECIMENS EXHIBITED.

Mr. Davis exhibited a section of the trunk of a large poison sumac (*Rhus Vernix* L.) from Clove Lake swamp, and a photograph of the tree from which it was obtained taken by Mr. Romeyn B. Hough on October 10th, 1905.

Also a cocoon of the American silk worm (*Telea polyphemus* Cramer), constructed in the nest of a chipping sparrow (*Spizella socialis* Wils.), and collected by a pupil of Mr. Stafford C. Edwards.

Mr. Edwards exhibited a series of specimens of fungi having grown around and enclosed various foreign objects, including twigs, grass stems and blades, hickory nuts, moss, a feather and a fragment of rock. Also an abnormal form, apparently of an *Elfvingia*, which had developed peculiar finger-like prongs, probably due to having been in contact with moving leaves while in process of growth.

Photographs of some of these have been made, two of which are shown in the accompanying plate.

Mr. Alanson Skinner exhibited a series of photographs illustrating the Iroquois-Algonkin Indians and other New York tribes, and gave an account of their former wars and migrations and their distribution at the present time.

NOTES AND COMMENTS.

Mr. James Chapin read a number of records of the recent appearance

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of the great black-backed gull (*Larus marinus* Linn.) in New York and vicinity.

Mr. Davis read from Wilson's Ornithology, pp. 336, 337, an account by Dr. Samuel L. Mitchill of a fishhawk's nest on his farm and inquired of Mr. William H. Mitchill if he knew the location of the farm. Mr. Mitchill stated that it is located at Manhassett, Long Island.

The meeting then adjourned.

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REGULAR MEETING.

APRIL 21st, 1906.

The meeting was held at the residence of Mr. William A. Shortt, Tompkinsville.

First Vice President William T. Davis in the chair.

Seventeen members were present.

The minutes of the meeting of March 17th, 1906, were read and approved.

The President was authorized to appoint a committee to suggest nominations for trustees to be voted for at the forthcoming annual meeting of the Association, and how they may be grouped into one, two and three year terms of office, in accordance with the By-Laws.

The Chairman was requested to appoint a committee to formulate the available sources of information relating to our local water supply and to report at the next meeting of the Association.

The Chairman appointed Mr. Thomas A. Fulton, Mr. William Mac Donald and Dr. Arthur Hollick as such committee.

The following were elected to active membership:

Adolf E. Feige, Jr., Huguenot.

David F. Simonson, Port Richmond.

Mr. William T. Davis exhibited specimens of several species of *Rudbeckia* and read the following paper:

ABERRANT FORMS OF RUDBECKIA HIRTA L.

The cone flower *Rudbeckia hirta* L., a native of the western prairies, is now a well established weed on Staten Island, as it is in most other parts of the eastern states. While a nuisance to the farmer, it certainly adds much to the beauty of our meadows, and being subject to considerable variations, is of more than common interest to the botanist. The plant is sometimes called "black-eyed Susan," on account of the purple-brown disk of the flowers, but individuals are occasionally met with that have the disk yellowish-green and are veritable green-eyed Susans. Several such plants have been observed on the Island.

Cone flowers may be occasionally found in blossom in the fall.

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This is particularly the case where they have been cut off during the summer, and not having been able to blossom at the usual time, they make a hasty growth in the few remaininng warm days. Such plants are usualiy low and spreading, and what is of more interest is the fact that the green involucral bracts are foliaceous, and as long or longer than the orange rays. Plants of this description have been found on our Island in October and in November.

Another interesting variation was observed by Dr. Philip Dowell and me at Suffern in Rockland Co., N. Y., where we found a great many cone flowers with very flat, small ovoid disks. They truly did not deserve the name of "cone flowers."

Still another variation was found in a plant growing on the embankment of the railroad near Suffern. It was a large and flourishing plant of *R. hirta* with the rays terra cotta colored, splashed irregularly with orange. It made a conspicuous and beautiful flower cluster.

Occasionally a cone flower producing one or more fasciated stems will be found, each stem bearing at its top a head of flowers made up of two or more of the usual flowers combined. We have also found heads with a double row of rays but otherwise showing no departure from the typical flowers.

The most interesting variation of *Rudbeckia hirta* that we have to mention is, however. one that was found last June in the rise on the salt meadows known as "Egypt," on the south side of our Island. The plant bore three flowers, each having all of the rays tubular instead of flat. The under surface of the rays formed the outside of the tubes which were complete, each tube having a dentated opening about 3 mm. wide. Two of the flowers had nine rays each, and one flower had eleven rays. The usual number of rays in this species is about thirteen or fourteen.

Cone flowers with tubular rays have been recorded before, and in an article on "Unusual Forms in Plants," printed in Appleton's *Popular Science Monthly* for July, 1899, Byron D. Halsted writes as follows: "A few weeks ago while passing through a field once devoted to corn, but now overgrown with weeds, and therefore of special interest to the botanist, my eyes fell upon a daisy plant all the heads of which were furnished with olive-green ray flowers instead of the ordinary pure white ones. These rays were smaller than the normal and quile inclined to roll . . . and form quills, as seen in some of the fancy chrysanthemums . . . A week or so later, while going through a similar field in an adjoining county to the one where the daisy freak was found, I came upon nearly the same thing as seen in the heads of the "black-eyed Susan," or cone flower (*Rudbeckia hirta* L.)"

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In "Species and Varieties, Their Origin by Mutation," Prof. Hugo DeVries records the following of a tubular-rayed composite: "In concluding this series of examples of horticultural mutations, I might mention two cases, which have occurred in my experimental garden. The first refers to a tubular dahlia. It has ray florets, the ligules of which have their margins grown together so as to form tubes, with the outer surface corresponding to the pale under-surface of the corolla.

"This novelty originated in a single plant in a culture from the seed of the dwarf variety—Jules Chretien. The seeds were taken from introduced plants in my garden, and as the sport has no ornamental value, it is uncertain whether this was the first instance or whether it had previously occurred in the nursery at Lyons, from whence the bulbs were secured. Afterwards it proved from seed, but was very variable exhibiting rather the features of an ever-sporting variety."

There are several examples of flowers with tubular petals mentioned by Maxwell T. Masters in "Vegetable Teratology," also cases where the petals have cohered.

In conclusion, we may add that here on Staten Island we have two other species of *Rudbeckia*, namely *R. laciniata* L. and *R. speciosa* Wenderoth. The last mentioned was found at Tottenville in 1898 and 1899 (*Proc. Nat. Sci. Assn. S. I.*, Oct., 1900); but the ground has since been built upon, and the species has probably been exterminated on the Island. The white-rayed ox-eye daisy, which came to us from the Old World, begins to blossom about the middle of May. I have found it on the Island as early as the 14th of the month. It is not until the first week in June, and more often later, that the yellow daisy or cone flower from the western plains begins to star the meadows. The native *Rudbeckia speciosa* I found to blossom later at Tottenville than *Rudbeckia hirta*, the first flowers not appearing until the last week in June.

Dr. Philip Dowell exhibited specimens and read the following:

BOTANICAL NOTES.

Additions to the Local Flora.

Salix Bebbiana Sarg. A single tree, 20 to 25 feet high, was found near Merrell Avenue, not far from South Avenue.

Sisymbrium altissimum L. A single clump of this plant was found growing along the roadside on Charles Avenue, Port Richmond.

Brassica juncea (L.) Cosson. Found in waste ground at Port Richmond. Mr. Wm. T. Davis has specimens of this Indian mustard col-

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lected by himself at New Brighton and at Richmond. He has also a specimen collected by Dr. A. A. Tyler at Richmond Valley.

Diplotaxis muralis (L.) DC. This sand rocket was found along Old Quarry Road just below Quarry Hill, not far from Elm Park station.

Roripa hispida (Desv.) Britton. A single plant was found near Arlington station in 1903.

Amelanchier spicata (Lam.) Dec. Mr. Davis and I found this low Juneberry in the sandy Watchogue region. It is usually found in "rocky places."

Viola rotundifolia Michx. Quite a few plants of this so-called stemless yellow violet were found growing in the woods southeast of Bull's Head.

Scrophularia leporella Bicknell. The specimen exhibited was collected at Palmer's Run near Port Richmond. I have records of the plants also from Silver Lake, New Springville and Richmond.

Aster undulatus loriformis Burgess. This variety of the wavy-leaf aster was found near Richmond, where typical *A. undulatus* L. is abundant.

Tanacetum vulgare crispum DC. Mr. Davis and I found this plant in 1903 at the junction of Bradley Road and Richmond Turnpike. Dr. N. L. Britton called my attention to this crisp-leaved variety of the tansy growing in the vicinity of Prince Bay.

On account of changes in nomenclature the following should be noted:

Myrica Carolinensis Mill. The common bayberry of our region was originally reported under the name *M. Cerifera* L., which is a more southern plant.

Zizia aurea (L.) Koch. Found along railroad at Arlington station.

Zizia cordata (Walt.) DC. Richmond and Ocean Terrace. These two were probably included under *Thaspium* in the original report.

New Localities.

Allium tricoccum Ait. Mr. Davis and I found this wild leak at Old Place late in the fall of 1904. It grows also near the junction of Merrell Avenue and South Avenue. It has been reported from Clove Lake and New Springville, at both of which places it is still found.

Salomonia commutata (R. & S.) Britton. The smooth Solomon's seal was found at Richmond and at Silver Lake. It has been reported from Clove Lake.

Iris prismatica Pursh, the slender blue flag, grows in the meadows

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near Palmer's Run, Port Richmond, and at Old Place. It was originally reported from New Dorp.

Isotria verticillata (Willd.) Raf. This has been reported from Huguenot, Giffords and Mariners Harbor. Mr. Davis and I found it east of Richmond toward Oakwood. With Mr. Stafford C. Edwards I found the plant in woods on the east side of Bradley Road. I have found it also in the woods just east and a little south of Egbertville.

Acroanthes unifolia (Michx.) Raf. This inconspicuous little orchid has been reported from New Dorp, Egbertville and Ocean Terrace. Mr. Davis and I found the plant at Great Kills and east of Richmond toward Oakwood.

Leptorchis Loeselii (L.) MacM. This was originally reported as occurring "On Staten Island in the gravelly bank of a railroad cutting." It has also been reported as found near Garretson by Miss C. A. Timmerman. The specimens exhibited were collected near the railroad west of Arlington station in 1904.

Urtica dioica L. This stinging nettle has been reported from Richmond. It grows also along the roadside leading south from Castleton Corners, not far from Ocean Terrace.

Urticastrum divaricatum (L.) Kuntze, the wood nettle, is still abundant in Bloodroot Valley, from which it was originally reported. I have found it around Richmond, along Palmer's Run at Port Richmond, and in the woods along South Avenue.

Polygonum emersum (Michx.) Britton was originally reported as *P. amphibium* L. from New Dorp. The specimen exhibited was collected near Green Ridge.

Alsine longifolia (Muhl.) Britton. The plant is abundant along Palmer's Run at Port Richmond, and this name should replace the *Stellaria longipes* Goldie reported from this locality. It grows also in the wet meadows in the Mariners Harbor region. It was originally reported from Tottenville.

Ranunculus obtusiusculus Raf. has been reported from Bull's Head and New Springville. I have found it in the marshes and swamps along Old Quarry Road and along South Avenue.

Ficaria Ficaria (L.) Karst. This plant was originally reported from near Four Corners. I am told by Messrs. Davis and Charles W. Leng that the plant has not been found in this locality in recent years. Dr. Arthur Hollick found a new locality for the plant and reported it in 1890 from "Willow Brook. Scarce." He tells me this locality is a little west of Bull's Head. Since the plant has been so scarce it may be of interest to note that I have found several closely matted patches of it this spring, also along Willow Brook but east of Bull's Head.

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Menispermum Canadense L. The moonseed has been reported from Richmond and Egbertville, where it is still found. Mr. Davis and I found the plant in 1903 at Ward's Point. I have found the plant also in the little piece of woods near Charles Avenue, Port Richmond.

Chelidonium majus L. This is the common celandine, and it is becoming more common on the Island. It has been reported from Egbertville, Richmond, New Dorp and Mariners Harbor. I have found it also at Dongan Hills, Grymes Hill, and in the vicinity of Bull's Head and New Springville.

Roripa sylvestris (L.) Bess. has been reported from the Woods of Arden and from Snug Harbor. I have found it also near Palmer's Run at Port Richmond.

Roripa palustris (L.) Bess. has been reported from Port Richmond, Woodrow and Stapleton. I found it in 1903 at Brooks' Pond, Old Quarry Road near Quarry Hill, and along South Avenue.

Roripa Nasturtium (L.) Rusby. The common water cress has been reported from Clove Lake and from Silver Lake. By this time it is more generally distributed. I have specimens from South Avenue and from Graniteville.

Roripa Armoracia (L.) A. S. Hitchcock. This, the common horseradish, has been reported as found growing wild at New Dorp and at Tottenville. The specimen exhibited was collected near the old dye works at Mill Creek Pond near Port Richmond, but the plant has been found in other localities of late years by Mr. Davis and others.

Dentaria laciniata Muhl. The cut-leaved pepper root has been reported from Silver Lake, Grant City and New Dorp. I have found the plant at Mill Creek Pond near Port Richmond, on Richmond Hill near Egbertville, and in a swamp along South Avenue. Mr. Davis tells me he has found it also at West New Brighton.

Saxifraga Pennsylvanica L. The swamp saxifrage was originally reported from a "swamp near Clove Lake." Later it has been found by several collectors in Reed's Basket Willow Swamp, though no one has previously taken the trouble to report it. The specimen exhibited was collected in a swamp along South Avenue.

Spiraea tomentosa L. has been reported from Clove Lake, New Dorp and Richmond. Additional localities are the Bull's Head region and just north of Bloodroot Valley.

Trifolium arvense L. The rabbit foot clover has been reported from Mariners Harbor and Tottenville. I have a specimen from Richmond.

Linum usitasissimum L. The common flax is commonly found along the railroads. The specimen exhibited was collected near Arlington

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station. The plant has been reported from Clove Lake, New Brighton and Tottenville.

Polygala ambigua Nutt. This was originally reported from Tottenville. I have found specimens answering to the description of this species at Port Richmond, Iron Mines at Westerleigh, and in the woods along Ocean Terrace.

Polygala Nuttallii T. & G. This has been reported from New Brighton, Richmond and Tottenville. I have found it quite common in wet meadows along the North Shore, and west near the junction of Merrell Avenue and South Avenue.

Enonymus Americanus L. This plant was originally reported from Clove Lake swamp. Just why it has not been reported from other localities I do not know, for it is common in our denser moist woods. I have collected specimens on Long Neck, along South Avenue, near New Springville, at Richmond, and at Port Richmond.

Staphylea trifolia L. The American bladder nut was originally reported in the "Elliott Collection." The finding of this plant at New Springville by Mr. Davis and myself gives us a definite locality.

Viola Le Conteana Don was reported from Clove Lake as *V. blanda amoena* (Le Conte) B. S. P. The same kind of violet grows in the woods along Bradley Road, at Bull's Head, and New Springville.

Oxypolis rigidus (L.) Raf. Reported from Linden Park, Tottenville, and Old Place. Mr. Davis and I have found this plant common on Long Neck and in the Watchogue region. It grows also in the vicinity of Richmond. Many of the plants of these regions have very narrow leaflets and should be considered a variety,—quite different, however, from the plants of the New Jersey pine barrens.

Lysimachia Nummularia L. This creeping loosestrife has been reported from Todt Hill and Garretson. It grows also at West New Brighton, Port Richmond, along Richmond Turnpike near Willow Brook hamlet, along the Egbertville Road near New Springville, at Clove Lake, and at several other places.

Naumburgia thyrsiflora (L.) Duby. I found this tufted loosestrife in a pond in the Middletown forest, not far from the top of Todt Hill. It has been previously reported from Silver Lake and Linden Park.

Gentiana Saponaria L. This has been only locally reported as occurring at Clove Lake and at Tottenville. More recently it has been well known as our common gentian, and it is found abundantly in wet meadows on the Island.

Convolvulus arvensis L. has been reported from New Dorp. I found it at Westerleigh in 1903. It grows also at Stapleton, Port Richmond, and New Brighton.

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Hydrophyllum virginicum L. still grows abundantly in Bloodroot Valley, from which it was originally reported. I have found it also near New Springville.

Dipsacus sylvestris Huds. The wild teasel grows along the Old Quarry Road near Quarry Hill. It has been reported from West New Brighton, Garretson, Green Ridge and Bull's Head.

Eupatorium verbenaefolium Michx. was originally reported from New Dorp as *E. teucrifolium* Willd. It is found quite commonly in our moist meadows. Definite localities are Old Quarry Road near Quarry Hill, and the Mariners Harbor and Watchogue regions, and Pleasant Plains.

Eupatorium ageratoides L. f. has been reported from Richmond, Ocean Terrace and Silver Lake. It is found quite generally in moist woods on the Island. I have found the plant at Port Richmond, Clove Lake, Bloodroot Valley and New Springville.

Solidago patula Muhl. has been reported from Richmond, Garretson, Clove Lake, Watchogue and Mariners Harbor. New Springville should be added to this list.

Solidago neglecta T. & G. This swamp goldenrod was originally reported from Clove Lake and "S. I." Mr. Davis and I have found it at Grant City, South Beach, South Avenue and Linoleumville. I have found it also in a swamp a short distance west of Richmond.

Euthamia Caroliniana (L.) Greene has been reported from Tottenville and Watchogue. I have found it also near Old Quarry Road, below Quarry Hill.

Aster macrophyllus L. This aster has been reported from Clove Lake and Eltingville. It is found quite commonly in our denser woods. Definite localities are Bull's Head, New Springville and Mariners Harbor.

Aster paniculatus Lam. This aster was originally reported as *A. simplex* Willd. as abundant in Clove Lake swamp. I have found it in several localities on the Island, mostly along roadsides. Definite localities are Port Richmond, Little Clove Road, the Egbertville Road, Richmond Turnpike opposite Darcey's woods (near Willow Brook hamlet), on Manor Road south from Castleton Corners, and at Tottenville.

Helianthus annuus L. The common sunflower has been reported from Tottenville and South Beach. I have found it quite commonly in waste ground at Port Richmond, West New Brighton, St. George and Tompkinsville.

Helianthus tuberosus L. The Jerusalem artichoke has been reported from Giffords and New Dorp. This sunflower is also commonly found

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in waste ground, as at Port Richmond and West New Brighton. There was a magnificent growth of this plant on the vacant lots along Hamilton avenue, New Brighton, before the ground was cleared for the new houses put up last year.

Galinsoga parviflora Cav. This plant was originally reported from near "Court House Station" and New Brighton, but it is now a very common weed in cultivated waste ground.

Anthemis arvensis L. has been reported from the "South Side." I have found it also near Brooks' Pond on the west side of the lake.

Matricaria Chamomilla L. has been reported from West New Brighton. I collected specimens of the plant in 1906 at Quarry Hill, where it had probably escaped from cultivation. It grows also along the roadside at Stapleton.

Dr. Arthur Hollick read the following notes on

TWO OLD PUBLICATIONS RELATING TO STATEN ISLAND AND VICINITY

I.—A short time ago I came across a newspaper notice to the effect that a reprint of Daniel Denton's "A Brief Description of New York," etc., had recently been issued by Burrows Bros., of Cleveland, Ohio, and on inquiry at the library of Columbia University I found copies of both the reprint and the original. This is an exceedingly interesting work, the scope of which may be judged from the title page, which reads as follows:

A
BRIEF DESCRIPTION
OF
NEW-YORK:
FORMERLY CALLED
NEW-NETHERLANDS.
WITH THE PLACES THEREUNTO ADJOYNING.
TOGETHER WITH THE
Manner of its Scituation, Fertility of the Soyle,
Healthfulness of the Climate, and the
Commodities thence produced.

By DANIEL DENTON

LONDON,
Printed for *John Hancock*, at the first shop in *Popes-Head-Alley* in *Cornhil* at the three Bibles, and *William Bradley* at the three Bibles in the *Minories*. 1670.

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Of special interest to us, however, is a brief reference to Staten Island, which reads as follows:

"Within two leagues of New York lieth Staten Island, it bears from New York West something Southerly: It is about twenty-miles long, and four or five broad, it is most of it very good Land, full of Timber, and produceth all such commodities as Long Island doth besides Tin and store of Iron oar, and the Calamine stone is said likewise to be found there: There is but one Town upon it consisting of English and French, but it is capable of entertaining more inhabitants; betwixt this and Long Island is a large Bay, and is the coming in for all ships and vessels out of the Sea: On the North-side of this Island After-skull River puts into the main Land on the West-side, whereof is two or three Towns, but on the East-side but one. There is very great Marshes or Medows on both sides of it, excellent good Land, and good convenience for the setling of several Towns; there grows black Walnut and Locust, as their doth in Virginia, with mighty tall straight Timber, as good as any in the North of America; It produceth any Commoditie Long Island doth."

We can recognize Arthur Kill or Achter-Kull in the name "After-skull River," and it would be interesting to know where the "Town * * * consisting of English and French" was located, as according to the author's account this was the only settlement on the Island at that time.

The "Calamine stone" mentioned is apparently meant for the zinc ore of that name, but as no trace of that mineral has been found here it is evident that the author has been misinformed in regard to its presence as well as in regard to tin.

II.—At our last meeting Mr. Wm. T. Davis had occasion to incidentally mention the name of Dr. Samuel L. Mitchill, grand-uncle of our fellow member, Mr. William H. Mitchill.

I have here a copy of the "Catalogue of the Organic Remains and other Geological and Mineralogical Articles contained in the Collection presented to the New York Lyceum of Natural History by Samuel L. Mitchill, one of the Members," published in 1826. It contains a steel-engraved plate of Dr. Mitchill.

The manner of listing the specimens is unique, or at least it seems so at the present day. On p. 24 there is listed "Ammonites, pectinites, madreporites, and spirulites, in wacke. Castleton, Staten Island."

This appears to be the only record of any specimens from Staten Island, and it probably refers to some that were obtained from a drift bowlder.

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The entire list indicates a curious lot of material from all parts of the world, arranged with but little system or regard for natural affinities. The last articles listed on "The twelfth Shelf" give an excellent idea of the way in which collections were arranged in the early days of museum economy, viz.:

"8. Stalactite, from Madison's Cave, Vir.—Van Ness.

9. French chalk, or craye de Briançon.

10. Factitious substance, resembling pumice, from Allaire's Ironworks, Egg Harbour.

11. Steatite, from Orford, high up Connecticut River; of which stones and fire places have been made.—Quincy.

12. Kelp, from Falkland Islands, from the burning of seaweeds.—McKay.

13. Several other things."

It is difficult to imagine what such an exhibit was meant to illustrate, and it is almost equal to that of the first Philadelphia museum, in which it was said that a stuffed monkey, a thigh bone of a mastodon and a machine for illustrating perpetual motion were placed in the same case, side by side.

SPECIMENS EXHIBITED.

Mr. James Chapin exhibited specimens of sumac branches showing the work of woodpeckers, together with skins of the downy woodpecker *Dryobates pubescens medianus* (Swains.), hairy woodpecker *D. villosus* (Linn.), and highholder *Calaptes auratus luteus* Bangs, and stated that most of the work was probably done by the species first named.

Mr. Chapin also exhibited a living specimen of the diamond-back terrapin *Malaclemmys centrata* Labr., captured at Watchogue.

Mr. Edward C. Delavan exhibited a large specimen of English flint, probably refuse from King's plaster mills, found in a rubbish heap in Green's field, New Brighton.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"Affinities of Certain Cretaceous Plant Remains Commonly Referred to the Genera Dammara and Brachyphyllum." Arthur Hollick and Edward C. Jeffrey. *Am. Nat.* vol. xl (1906), pp. 189-216, pls.

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1-5 [plates not numbered but referred to by numbers in the accompanying text].

This contribution, aside from any scientific value that may pertain to it, is locally of interest for the reason that it was inspired by and is based upon discoveries made at Kreischerville by one of our members, and first announced at one of our meetings (*Proc. Nat. Sci. Assn. S. I.*, vol. ix, pp. 31, 32, Nov. 12th, 1904.)

The material selected by the authors for examination was obtained mostly from the amber bed in the Androvette clay pit, but some specimens came from the nearby Drummond pit. This material consisted of lignitic fragments, which were separated from the matrix by maceration in water, and other larger isolated pieces of lignite. Special attention was devoted to certain cone scales commonly referred to the genus *Dammara*; leafy branches recognized as belonging to the extinct coniferous genus *Brachyphyllum*, and some of the coniferous lignites. The results obtained from microscopical examinations of these remains are described and figured.

The cone scales are shown not to belong to the genus *Dammara*, but to a hitherto undescribed extinct genus, closely allied, to which the name *Protodammara* is given, and the Kreischerville specimens are recognized as a new species under the name *P. speciosa*; the genus *Brachyphyllum* is identified for the first time as belonging to the Araucarineous group of conifers and probably as representing the leafy branches of the tree that bore the *Protodammara* cones, and the lignites are also identified as belonging to the same coniferous group.

The value of critical microscopic examination of such material is emphasized throughout the text, and the illustrations are admirable examples of photomicrographic work.—A. H.

The meeting then adjourned.

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ANNUAL MEETING.

MAY 19th, 1906.

The first annual meeting of the Association was held at the Staten Island Academy, New Brighton.

President Howard R. Bayne in the chair.

Nineteen members were present.

The minutes of the meeting of April 21st, 1906, were read and approved.

The following reports were read and ordered placed on file.

ANNUAL REPORT OF THE BOARD OF TRUSTEES.

The Board held two stated and two special meetings.

One trustee, Mr. Lester W. Clark, Sr., resigned, and Dr. Philip Dowell was selected to fill the vacancy.

Rules and regulations for the transaction of the business of the Board were formulated and adopted.

An Executive Committee, an Auditing Committee, and a Publication Committee were provided for and appointed. Each of these committees organized, met when necessary and transacted such business as came within the scope of its duties from time to time during the year. Reports of these committees are appended.

The formal transfer of the property of the Natural Science Association of Staten Island to the Staten Island Association of Arts and Sciences was accomplished, and copies of the legal papers in the matter were placed in the custody of the Recording Secretary.

Boxes for the keeping of important official papers were obtained for the Recording Secretary and Treasurer respectively, and were placed in the safe deposit vault of the Staten Island branch of the Corn Exchange Bank at St. George.

A corporate seal of the Association was made and placed in the care of the Recording Secretary.

The Treasurer was placed under a bond of $1,000.00 in the United States Guarantee Company of New York.

Provision was made for the permanent investment of all life membership contributions, separate from the general funds of the Association.

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The routine business of the Association has been carried on continuously by the officers, as will be set forth in their annual reports.

Respectfully submitted for the Board,
Arthur Hollick, Secretary.

Report of the Executive Committee.

The Executive Committee held only one formal meeting, on March 26, 1906, at which the following items of business, referred to the Committee by the Board of Trustees, were acted upon:

I.

Resolved: that the form and amount of the Treasurer's bond be referred to the Executive Committee with power to determine.

[Extr. Minutes Board of Trustees, Dec. 5, 1905.]

Bond No. 230080, of the United States Guarantee Company, 111 Broadway, New York, N. Y., in the sum of $1,000.00, for one year, from January 10th, 1906, to January 10th, 1907, was submitted and examined.

Voted: that the Treasurer's bond in the sum of $1,000.00 (Bond No. 230080 of the United States Guarantee Company), be and the same is hereby approved.

Voted: that the Treasurer be authorized to pay the amount of the annual premium ($7.50) from the funds of the Association.

II.

Resolved: that the disposition of moneys received from life membership fees be referred to the Executive Committee with power to determine.

[Extr. Minutes Board of Trustees, Jan. 6, 1906.]

It was determined to open a savings bank account by depositing $100.00, representing the two life membership contributions of fifty dollars each, previously received; and it was *Voted:* that all future life membership contributions be deposited to the credit of the said account, and that this account, including all accrued interest thereon, be reserved as a permanent investment fund.

The routine work of the Committee, such as was necessary to keep the administrative machinery of the Association in motion during the intervals between the meetings of the Board of Trustees, was accomplished by informal conferences from time to time.

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Negotiations with the municipal authorities in regard to obtaining quarters for the Association in the new Borough Hall were carried on continuously and are yet under way. The President in his annual address will give such further information in this connection as he may deem proper, but the details are under advisement and should be regarded as matters for executive consideration until finally adjusted.

Howard R. Bayne, chairman.
J. Blake Hillyer.
William H. Mitchill.
Charles A. Ingalls.
Arthur Hollick, secretary.

Report of the Auditing Committee.

The Auditing Committee held one meeting, on January 9th, 1906, on which date the books and accounts of the Treasurer were subjected to careful examination. These were found to be correct, and a certificate to that effect was transmitted to the United States Guarantee Company, with which the Treasurer is bonded.

George S. Humphrey, chairman.
Charles A. Ingalls, secretary.

Report of the Publication Committee.

The Publication Committee met and formally organized on December 21st, 1905. Rules and regulations designed to secure uniformity in the publications of the Association were formulated and adopted, and the details of preparing copy, editing, printing and distributing publications were arranged.

Since that time the following publications of the Association have been issued and distributed:

I. Index to vol. ix of the *Proceedings of the Natural Science Association of Staten Island.* Edition of 250 copies.

II. Pamphlet of 25 pages, containing a brief history of the Association, Act of Incorporation, Constitution and By-Laws, Rules and Regulations of the Board of Trustees, list of members, officers and standing committees. Edition of 350 copies.

III. Part I of Volume I of the *Proceedings of the Staten Island Association of Arts and Sciences*, consisting of an octavo pamphlet of 20 pages, containing the proceedings of the meetings of June 3d, October

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21st, November 18th and December 16th, 1905. Edition of 350 copies.

Philip Dowell, chairman.
William T. Davis.
Arthur Hollick, secretary.

ANNUAL REPORT OF THE RECORDING SECRETARY.

No. of incorporators included in the Act of Incorporation of May 17th, 1905	108
Active members since elected	26
Resigned	3
Dropped from the roll	2
On roll of membership at date, including two life members and two honorary members	129

Arthur Hollick,
Recording Secretary.

ANNUAL REPORT OF THE CORRESPONDING SECRETARY.

The Association has no corresponding members. The work of the Corresponding Secretary has been confined to answering inquiries in relation to the publications of the Association. Requests for back numbers of the *Proceedings* and for complete files of the back numbers, have been quite numerous, not only from our exchanges but also from public libraries and similar institutions.

Philip Dowell,
Corresponding Secretary.

ANNUAL REPORT OF THE TREASURER.

Debit and Credit Account.

Dr.

Balance on hand, December 29th, 1905	$501.22
Since received for membership dues and interest on deposits	308.52
	$809.74

Cr.

Disbursements.	
Printing, postage and stationery	$138.70
Administration (Recording Secretary and Treasurer)	26.84
Premium on Treasurer's bond	7.50
Janitor	5.00
Subscriptions to periodicals	4.00
Exchange on check	.10
	$182.14
Balance on hand, May 19th, 1906	627.60
	$809.74

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Disposition of Funds.

On deposit in Staten Island Savings Bank	$316.02
" " " Corn Exchange Bank, Staten Island Branch	304.13
Cash in hands of Treasurer	7.45
	$627.60

Additional Assets.

Back dues outstanding	$33.00
Current dues payable	34.50
	$67.50

Liabilities.

Outstanding obligations (estimated)	$5.00

J. Blake Hillyer,
Treasurer.

REPORT OF THE HONORARY CURATOR.

Museum Collections.

Eight separate donations have been made to the Museum, including 4 specimens in botany, 30 in geology, and several hundred in zoology.

The most important accession is the collection of several hundred shells donated by Rev. Ernest F. Neilson of Newburgh, N. Y., a former member and one of the organizers of the Natural Science Association of Staten Island.

By reason of want of space it has not been possible to display any of the recent accessions, which have been placed in the care of the members of the Association temporarily, and a large amount of additional material has been promised as soon as adequate accommodations can be secured.

Library.

A number of historical documents, old local newspapers, pamphlets and newspaper clippings of local interest, pictures, photographs, etc., have been donated, which should be properly classified and arranged under approved library methods.

The publications received in exchange for the *Proceedings* has increased, although no effort in this direction has been made on the part of the Association. Our regular mailing list now includes eighty-five societies and institutions, from the following of which publications have been received during the past year:

Academy of Natural Sciences of Philadelphia, Philadelphia, Pa.; *Proceedings.*

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Academy of Science of St. Louis, St. Louis, Mo.; *Transactions.*

American Academy of Arts and Sciences, Boston, Mass.; *Proceedings.*

Augustana College and Theological Seminary, Rock Island, Ill.: *Library Publication.*

Boston Society of Natural History, Boston, Mass.; *Proceedings.*

Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y.; *Science Bulletin* and *Cold Spring Harbor Monographs.*

Cincinnati Society of Natural History, Cincinnati, Ohio; *Journal.*

Colorado College Scientific Society, Colorado Springs, Colo.; *Colorado College Publications* and *Colorado College Studies,*

Colorado Scientific Society, Denver, Colo.; *Proceedings.*

Columbia University, Geological Department, New York, N. Y.; *Contributions.*

Davenport Adademy of Natural Sciences, Davenport, Iowa; *Proceedings.*

Elisha Mitchell Scientific Society, Chapel Hill, N. C.; *Journal.*

Entomological Society of Ontario, London, Canada; *Canadian Entomologist* and *Annual Report.*

Field Columbian Museum, Chicago, Ill.; *Publications* (Zoological, Geological, Botanical and Report Series).

Geological Institute of the University of Upsala, Upsala, Sweden; *Bulletin.*

Geological and Natural History Survey of Canada, Montreal, Can.; *Annual Report* and Catalogue of Canadian Birds.

Geological Survey of Ohio, Columbus, Ohio; *Reports, Bulletin.*

Historical and Scientific Society of Manitoba, Winnepeg, Manitoba: *Transactions* and *Annual Report.*

Instituto Geologico de Mexico, Mexico, Mex.; *Boletin, Parergones.*

Kansas Academy of Science, Topeka, Kan.; *Transactions.*

Linnæan Society of New York, N. Y.; Abstract of *Proceedings.*

Lloyd Library, Cincinnati, Ohio; *Bulletin* and *Mycological Notes.*

Michigan Academy of Science, Ann Arbor, Mich.; *Bulletin, Annual Report* and separate papers.

Missouri Botanical Garden, St. Louis, Mo.; *Annual Report.*

Museo Nacional de Costa Rica, San Jose, Costa Rica; *Paginas Ilustradas.*

Museo Nacional de Montevideo, Montevideo, Uruguay; *Anales* and Flora Uruguaya.

Natural History Society of New Brunswick, St. John, N. B.; *Bulletin.*

New York Academy of Sciences, New York, N. Y.; *Annals, Memoirs.*

New York Botanical Garden, New York, N. Y.; *Bulletin.*

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Nova Scotian Institute of Science, Halifax, N. S.; *Proceedings* and *Transactions*.

Oberhessischen Gesellschaft, fur Natur-und-Heilkunde,Geissen, Ger.; *Berichte*.

Ohio State Archaeological and Historical Society, Columbus, Ohio; *Publications*.

Ottawa Field Naturalists' Club,Ottawa, Can.; *The Ottawa Naturalist*.

Public Museum of the City of Milwaukee, Milwaukee, Wis.; *Annual Report*.

Rochester Academy of Science, Rochester, N. Y.; *Proceedings*.

Roger Williams Park Museum, Providence, R. I.; *Bulletin*, *Apteryx* and *Monograph*.

Smithsonian Institute and United States National Museum, Washington, D. C.; *Bulletin*, *Contributions*, *Proceedings*, *Annual Report*.

Sociedade Scientifica de Sao Paulo, Sao Paulo, Brazil; *Reports* and *Revista*.

Societas Entomologica Bohemiae, Prague, Austria; *Acta*.

Societas Pro Fauna et Flora Fennica, Helsingfors, Finnland; *Acta* and *Meddelanden*.

Torrey Botanical Club, New York, N. Y.; *Bulletin*.

Tufts College, Tufts College, Mass.; *Tufts College Studies* (Scientific Series).

United States Department of Agriculture,Washington,D.C.; *Bulletins*.

United States Geological Survey, Washington, D. C.; *Annual Report*, *Bulletin*, *Mineral Resources of the United States*, *Monographs*, *Professional Papers*, *Water Supply and Irrigation Papers*.

University of Kansas, Lawrence, Kan.; *Science Bulletin*.

University Museum, University of Michigan, Ann Arbor, Mich.; Reprints from *Annual Reports*.

University of Montana, Missoula, Mont.; *Bulletin* (Biological Series) and President's Report.

University of the State of New York, Albany, N. Y., *Annual Report* and *Bulletin*.

University of Vermont and State Agricultural College, Burlington, Vt.; *Annual Report* and *Bulletin*.

Vassar Brothers Institute, Poughkeepsie, N. Y.; Reprint of the Debate and Proceedings of the Convention of the State of New York at Poughkeepsie, June 17th, 1778.

Wilson Ornithological Club, Oberlin, Ohio; *Wilson Bulletin*.

Wisconsin Academy of Sciences, Arts, and Letters, Madison, Wis.; *Transactions*.

By subscription we have obtained the *American Naturalist* and

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Psyche, current numbers, and by donation, from Mr. O. M. Curtis, the *Bulletins* of the American Geographical Society, and from Dr. Arthur Hollick the current numbers of *Science*.

Charles A. Ingalls,
Hon. Curator.

The committee on nominations for trustees reported as follows:

For term of three years:

Howard Randolph Bayne
William Thompson Davis
Arthur Hollick
Charles Arthur Ingalls

For term of two years:

Philip Dowell
John Blake Hillyer
George Scranton Humphrey
William Hinman Mitchill

For term of one year:

Daniel Delehanty
Samuel Alexander Henzey
William Armour Johnston
Adolph Charles Knothe
Charles William Leng

The report of the committee was received, and the Association proceeded to ballot.

Eighteen ballots were cast, resulting in the election of the nominees suggested by the committee, and the President declared them to be elected to their respective terms of office.

The committee appointed to determine the subject of competition for the year 1906-7 for the annual prize offered by the Association for work in natural science open only to pupils in the Curtis High School, and the conditions to govern the award of the prize, reported as follows:

Subject:

A collection of not less than fifty native and introduced wild plants of Richmond County.

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Conditions:

1. The collection shall be made between July 1st, 1906, and June 1st, 1907.

2. Each specimen shall be separately mounted on a sheet of mounting paper, 16½ x 11½ inches in size.

3. Each specimen shall be accompanied by a descriptive label giving the correct botanical name, the popular name when any such is recognized, the habitat (meadow, hill, swamp, woods, pond, etc.), the locality where found and the date when collected.

4. The entire work shall be completed and placed in the hands of the Principal of the School not later than June 17th, 1907.

Notes:

The prize may not necessarily be awarded for the *largest* collection. Care in the selection and preparation of the specimens, variety and rarity of the plants collected, etc., will also be considered.

It is recommended that not less than five species of grasses, ten species recognized as weeds, and ten specimens of shrubby plants and trees be included in each collection.

In the case of shrubs and trees the specimens may be either in flower or in fruit.

Voted: that the report of the committee be received and placed on file and that a copy of the same be transmitted to the authorities of the school, and that the original resolution be amended so as to read as follows:

Resolved: that the Staten Island Association of Arts and Sciences offer a prize of *the value of* ten dollars ($10.00) annually for work done in natural science, open only to pupils in the Curtis High School, under such conditions as may be mutually agreed upon by the trustees of this Association and the authorities of the School: *the successful competitor to have the option of accepting either ten dollars or some object of equal value to be selected by him.*

The committee appointed to consider the subject of local water supply submitted a report consisting of a copy of a report made by Dr. Arthur Hollick to the Staten Island Chamber of Commerce in 1904, together with a bibliography of publications relating directly or indirectly to the subject.

Voted: that the report of the committee be received and placed on file, and the bibliography of publications be printed in the *Proceedings*, as follows:

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References to Sources of Local Water Supply.

"Our Water Supply: Some Notes as to Its Quality and Quantity." Arthur Hollick. *Staten Isld. Magazine*, vol. i, Aug. 1888.

Report of the Health Committee of the Good Government Club on the Water Supply of New Brighton and Port Richmond. 1895.

Report on New York's Water Supply, made to Bird S. Coler, Comptroller by John C. Freeman, etc. 1900.

Report of the Merchants' Association on the Water Supply of the City of New York. 1900.

Report of the Commission on Additional Water Supply for the City of New York. 1903 [1904].

"The Normal Distribution of Chlorine in the Natural Waters of New York and New England." Daniel D. Jackson. U. S. Geol. Survey, *Water Supply and Irrigation Paper* No. 144, 1905.

Underground Water Resources of Long Island, New York." A. C. Veatch and others. U. S. Geol. Survey, *Professional Paper* No. 44. 1906.

Notes and articles in the *Proceedings of the Natural Science Association of Staten Island*, vol. ii, Feb. 14, 1891, p. 72; iii, Dec. 12, 1891, p. 5; iv, Feb. 9, 1895, p. 60; vi, Mch. 13, 1897, p. 22; vi, Dec. 11, 1897, p. 45; vi, Oct. 8, 1898, p. 62; vi, Oct. 8, 1898, p. 63; vii, June 10, 1899, p. 19; vii, Feb. 10, 1900, p. 33; vii, Oct. 13, 1900, p. 46; viii, Dec. 13, 1902. p. 45; viii, Mch. 14, 1903, p. 57; viii, Oct. 10, 1903, p. 68; ix, Feb. 13, 1904, pp. 9, 11.

The President announced that he had appointed a special committee, consisting of Mr. Ira K. Morris, Mr. Wm. T. Davis and Dr. Arthur Hollick, to confer with Borough President George Cromwell, on his request, in relation to the inscription of local important events and dates on a bronze tablet proposed to be placed in the new Borough Hall, and Mr. Morris read a tentative list of such events.

The action of the President was approved, and the Committee was authorized to confer with Mr. Cromwell with power to determine what events it would be desirable to have inscribed on the tablet.

Mr. J. Blake Hillyer referred to the fact that the 12th of next November would be the 26th anniversary of the organization of the Natural Science Association of Staten Island, and suggested that the event should be celebrated and commemorated in some manner suitable to the occasion.

Voted: that the Board of Trustees be directed to consider and to

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formulate a program to celebrate and commemorate the organization on November 12th, 1881, of the Natural Science Association of Staten Island.

The President then delivered his annual address as follows:

ANNUAL ADDRESS OF THE PRESIDENT.

The By-Laws of this Association require that the President shall deliver an address at the annual meeting following his election to office. The subject and scope of such an address are not designated, but it may be assumed that it has to deal with the transactions and progress of the Association during the past year and occurrences in the community which it serves and with which it has a deep concern.

The past year witnessed the dissolution of the Natural Science Association of Staten Island, and it became my duty under the law to administer those legal formalities which put an end to its long and honorable career. I feel no qualms of conscience at my participation in these transactions, nor have I a sense of blood guiltiness in consummating this process of dissolution. All that was best in the old Association was transferred into the new, stronger, more influential body, which I trust is now entering upon a career even more lengthy, honorable and useful than that of its predecessor.

The Staten Island Association of Arts and Sciences was incorporated on May 17th, 1905, by an Act of the Legislature of this State. The Act of Incorporation is Chapter 526 of the Laws of 1905. It is found in the printed Acts of the Assembly of the 128th Session in Vol. 2 at page 1190. The Charter thus granted was formally accepted at a general meeting of the incorporators on June 3d, 1905. A transfer of the property from the old to the new corporation as provided by law was effected on June 6th, 1905. The affidavit to that effect was made by the President of the old Association before Mr. Justice Kelly of the Supreme Court, was filed in the office of the Secretary of State on the 27th day of June, 1905, and under Section 6 of the Act of Incorporation the corporate existence of the old body ceased on that day.

The *Proceedings of the Natural Science Association of Staten Island*, therefore, ended June 3d, 1905, with Volume ix, which contained its proceedings from November 14th, 1903, to June 3d, 1905. Volume i of the *Proceedings of the Staten Island Association of Arts and Sciences* begins, therefore, with the meeting of June 3d, 1905.

This Corporation was duly organized under the law and has been in active operation ever since. Its publications up to this time have consisted of a brief historical statement, the Act of Incorporation, Consti-

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tution and By-Laws, names and residences of the Board of Trustees, list of members, trustees, officers and standing committees, under one cover, so paged as to precede the publication of the regular Proceedings of the Association, which was issued on April 10th, 1906, beginning with the proceedings of the first meeting and ending with the proceedings of the meeting of December 6th, 1905.

This is the first annual meeting of the new corporation. The last annual meeting of the old body occurred on November 10th, 1904.

During the past year the trustees named in the Act of Incorporation attended to all business affairs of the Corporation, leaving matters of scientific and historical interest to be transacted at the regular monthly meetings of the members of the Association.

The particular aspect of the affairs of the Association may be gathered from the reports of officers and of the trustees already submitted. These will inform you of the membership, the finances, the work of your trustees, officers and standing committees, the condition of your museum and library, and other matters of business. It is not necessary for me to dwell upon them further than to remark that your membership was never larger or more fairly representative of the intelligence and standing of the community.

Your treasury has never been in better condition. Your business affairs have been looked after studiously and conscientiously on the part of the trustees, and were never more encouraging than at the present time.

Accessions to your scientific and historical collections have been numerous, valuable and interesting. Your library is constantly enlarging. The publication of your *Proceedings* has improved in style and substance. Your publications are more appreciated than ever, and new requests for them come with frequent recurrence from scientific bodies and libraries in all parts of this country as well as abroad. Among those seeking your publications are the Boston Public Library, the Public Library of St. Louis, the Library of McGill University of Montreal, and the Library of the University of Michigan. Requests frequently come in for back numbers of your *Proceedings*. Your exchange list includes libraries, associations and individuals not only in every quarter of this country, covering twenty-one different states, but in many parts of Europe, Canada, England, Scotland, Ireland, Germany, Russia, Sweden, Bohemia, Mexico, Brazil, Costa Rica and Uruguay. In these simple facts we may take a modest but natural pride, which should stimulate us all to render our *Proceedings* even more worthy of the appreciation and respect which they have so generally received.

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During the past year we have had a number of interesting and instructive papers on various subjects from Mr. William T. Davis, Mr. Ira K. Morris, Mr. James Chapin, Dr. Arthur Hollick, Dr. Philip Dowell and others. Specimens have been presented for discussion at our meetings by Mr. Samuel R. Brick, Jr., Mr. L. W. Freeman, Mr. Charles A. Ingalls, Mr. Ira K. Morris, Mr. Alanson Skinner, Mr. William T. Davis, Mr. Stafford C. Edwards, Mr. E. C. Delavan, Dr. Philip Dowell and Dr. Arthur Hollick; and interesting historical documents have been exhibited and donated by Mr. Ira K. Morris, Mr. Leavitt C. Parsons and Mr. William H. Mitchill.

Informal addresses on divers subjects have been made by Messrs. Chapin, Davis, Hollick, Allen and Skinner, and we are greatly indebted to our recording secretary, Dr. Arthur Hollick, for the care that he has taken in compiling for our *Proceedings* memoranda of recent literature relating to Staten Island.

The Association has been hospitably and delightfully entertained at the homes of our members, Messrs. William Allaire Shortt, William H. Mitchill, Lester W. Clark, Sr., Read Benedict and Montague Lessler. To these gentlemen we owe, and I take the liberty of expressing for you, our sincere and appreciative thanks for the pains they have taken to provide us with these entertainments and for the uniform success that has followed their efforts. The President of the Association has also had the honor of having the Association meet at his home.

A full set of our *Proceedings* has been sent to the Borough libraries at Port Richmond and Tottenville.

The conditions of awarding the prize of $10 a year, open to students of Curtis High School in our Borough, for work in natural science, have been determined by a committee consisting of Dr. Arthur Hollick, Dr. Philip Dowell and Mr. O. D. Clark, who were appointed by the President for that purpose.

The Rev. Ernest F. Neilson of Newburgh, N. Y., a former resident of our Borough, and one of the organizers of the Natural Science Association of Staten Island, has donated to our museum an interesting and valuable collection of shells, which has been gratefully accepted by the trustees.

The trustees have been greatly interested in the effort to secure accommodations from the City for our museum and library. This took the form of two propositions. One was to secure quarters in the new Borough Building at St. George, and the other was to apply to the City for land and an appropriation to erect a suitable building thereon for a lecture hall and space for the museum and library and rooms for

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administration purposes. After careful consideration and consultation with the City authorities, it seemed best to confine our efforts for the present to securing quarters in the Municipal Building. Your President was accordingly authorized to take such steps on this account as he might see fit. In this direction, I have had correspondence and interviews with Hon. George Cromwell, President of the Borough, Hon. John J. Delany, Corporation Counsel, and with other City officials. I am glad to say that Mr. Cromwell has evinced a commendable interest and desire to help us in securing such quarters, and that we have had encouragement also from the friendly attitude of Mr. Delany and other officials.

Dr. Hollick and myself have inspected the room which Mr. Cromwell wished to assign to us upon getting the requisite authority. The dimensions of this room have been taken and those for show cases and other furniture have been prepared and submitted to the architect of the building for plans and specifications. I have on behalf of the Association, filed a petition with the Sinking Fund Commissioners for this room, to be leased to the Association at a nominal rental, as authorized by the law of incorporation. The real estate expert of the Comptroller, to whom the matter was referred by the Sinking Fund Commissioners reported back that in his judgment the application should stand over until after all the different departments of the City Government have found sufficient room in the Borough Hall for their needs, which will be about July 1st, 1906. This recommendation was approved by the Comptroller, and the report was accepted and action deferred as recommended. This report dated April 21st, 1906, may be found in the City Record for Monday, May 7th, 1906, where it is printed at length.

I have received a letter from the President of the Borough, requesting this Association to suggest historical matter for a tablet to be erected in the Municipal Building, memorializing important events in the history of Staten Island. I have assured Mr. Cromwell of the wish of the Association to aid in this matter, and I have appointed for this purpose, a committee consisting of Mr. Ira K. Morris, Mr. William T. Davis and Dr. Arthur Hollick, with the President as ex-officio member under the By-Laws. This committee has met and has requested its chairman, Mr. Morris, to make a report to the Association to-night.

In aid of our local history, I recommend that an additional standing committee be appointed for the purpose of accumulating historical documents, perpetuating the memory of historical events, acquiring mementoes of the past, and generally aiding in the preservation of land-

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marks and in the development of local history. I also recommend that we add to the offices of the Association that of a historian, whose duty it shall be to prepare a record for the archives of the Association of cotemporaneous local events and other matter deemed worthy of rescue from oblivion.

In conclusion I cannot too strongly urge the members of the Association to maintain their interest and efforts for the enlargement of its influence and the extension of its beneficent purposes. It is the special mission of the Board of Trustees at this time to accomplish these results by devoting to the enjoyment of the public the large and valuable collection of specimens owned by the Association, which is now and for some years has been practically on storage, of little use to the members and none whatever to the community. Our proffer to the City is to turn over our museum for public exhibition and our library for public use, if the City will supply the housing and the expense of care and preservation. So much and much more have been done for other Boroughs, and this Borough is not asking too much of the City when we petition for this modest concession to the civilization, the educational sense, and the refinement of our community.

We need something else than sewers to take the filth away. We need conduits for an elevating public enjoyment, an informing public education, an enlightening public opinion, developing moral virtues and gratifying intellectual aspirations. Opportunities along these lines are notably deficient in this Borough. If this Association, by working out the purposes of its incorporation, may bring to the community facilities required for its culture and social development, it will have conferred benefits that make it worth while to live, and will have introduced a new era full of honor to us and blessings to our posterity.

Dr. Philip Dowell exhibited specimens of ferns and read the following paper:

DISTRIBUTION OF FERNS ON STATEN ISLAND.

Year by year new tracts of land on Staten Island are divided into smaller plots, and fine pieces of woodland are cleared for commercial purposes. Hand in hand with the disappearance of the forests and the encroachments of the habitations of man the natural beauty of the Island is destroyed, and our native plants and animals vanish. Some of the wild flowers, which are prized for their beauty, like the trailing arbutus, and other plants used extensively for decorations, as the holly the running clubmoss, and several ferns, have been picked in large quantities and thus ruthlessly destroyed. Frequent forest fires destroy

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large numbers of our native wild plants each year. Thus it happens that many of the plants which were originally listed in the Flora of Richmond County, New York, published by Hollick and Britton in 1879, with later additions, have been exterminated. And many of the plants then listed as common have now become rare. Thus several ferns that were formerly common on the Island are now only occasional or at best only frequent, such as the maidenhair, the ebony spleenwort, the silvery spleenwort, the marginal shield fern, and the beech fern.

The spinulose shield fern still occurs in the wooded portions of the Island, but it is very sparingly found in those pieces of woodland that are cleared of underbrush.

In spite of the devastation that is continually going on, the fern flora of the Island is still comparatively rich and varied, as will appear from this list.

The following ferns may be classed as common:

1. *Botrychium Virginianum* (L.) Sw.—Grape fern.
2. *Osmunda regalis* L.—Royal fern.
3. " *cinnamomea* L.—Cinnamon fern.
4. " *Claytoniana* L.—Clayton's fern.
5. *Pteridium aquilinum* (L.) Kuhn.—Brake.
6. *Asplenium Filix-foemina* (L.) Bernh.—Lady fern.
7. *Polystichum acrostichoides* (Michx.) Schott.—Christmas fern.
8. *Dryopteris Noveboracensis* (L.) A. Gray.—New York fern.
9. *Dryopteris Thelypteris* (L.) A. Gray.—Marsh fern.
10. *Dennstaedtia punctilobula* (Michx.) Moore.—Hay fern.
11. *Onoclea sensibilis* (L.)—Sensitive fern.

The following may be classed as frequent:

12. *Botrychium obliquum* Muhl.—Ternate grape fern.
13. " *dissectum* Spreng. (Perhaps better considered as a variety of the former.)
14. *Woodwardia areolata* (L.) Moore.—Narrow-leaved chain fern. (Abundant in places).
15. *Asplenium acrostichoides* Sw.—Silvery spleenwort.
16. *Dryopteris spinulosa* (Retz.) Kuntze.—Spinulose shield fern.
17. " " *intermedia* (Muhl.) Underw.
18. *Phegopteris hexagonoptera* (Michx.) Fee.—Beech fern.

The rest are occasional or rare.

19. *Polypodium vulgare* L.—Polypody. Rare. In the original list this fern was reported from Four Corners and Giffords. In the list of 1880-2 it was reported as found "sparingly near Silver Lake, Four Corners, Richmond, and top of Ocean Terrace." In the *Proceedings* of May

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1904 (vol. ix, no. 7), Mr. William T. Davis reported it as "now nearly exterminated on our Island," and that he had found it growing at the base of a tree back of Richmond. Since then Mr. Davis and I have found a few small patches of the fern on rocks by the side of the south branch of New Springville Brook, between New Springville and Richmond, and one little clump of it on a small rock on the County Farm. Last summer I found another clump of it in Darcey's Woods near Richmond Turnpike; also on a rock and on a level with the surrounding soil surface. The larger bowlders or rocks that are raised considerably above the surrounding surface are too dry for this fern on Staten Island, because the forests have been more or less cleared by the axe or by fire.

20. *Adiantum pedatum* L.—Maidenhair. This is still quite abundant in Bloodroot Valley and in the ravine leading down to Reed's Basket Willow Swamp, but otherwise it is found rather sparingly.

21. *Woodwardia Virginica* (L.) J. E. Smith.—The larger chain fern was reported in the original list as "not rare." At present it is rather rare on the Island, because many of the localities where an occasional specimen may be found have been so much changed that they are no longer favorable to the growth of this fern. Mr. Davis pointed out to me a small patch of it between Mariners Harbor and Arlington. With Mr. Davis I found a few straggling plants of it near Oakwood and near Richmond Valley. I found a few plants of the fern northeast of Richmond toward New Dorp, and also on the margin of a pond in the woods on the east side of Bradley Road. It grows fairly abundant in two places, one about half a mile south of Mariners Harbor and the other between Merrell Avenue and Lambert's Lane.

22. *Asplenium platyneuron* (L.) Oakes.—The pretty little ebony spleenwort is now rather scarce. I have found it in the vicinity of Richmond and in Bloodroot Valley, but I have no record of finding it elsewhere on the Island.

23. *Dryopteris simulata* Davenp.—This has been called the Massachusetts fern and was first described in 1894. With Mr. Davis I found it growing near Richmond Valley in 1903. (*Proceedings*, vol. ix, p. 8.) Last summer I found a few plants of this fern near Linoleumville and also in a thicket of alders between Merrell Avenue and Lambert's Lane. A number of plants of this fern are to be found near South Avenue, a short distance south of Merrell Avenue.

24. *Dryopteris cristata* (L.) A. Gray.—The crested shield fern has been locally reported from Mariners Harbor. In the *Proceedings* of Nov. 1892, Dr. N. L. Britton reported it found near Oakwood by Mrs. N. L. Britton and made this comment: "This fern is exceedingly

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rare on Staten Island, having been previously reported from but two localities, in one of which, the Clove Lake swamp, it has been since exterminated." My first find of this plant on the Island was in 1903, when I climbed with some difficulty over standing water and secured a specimen at the base of a tree stump in a swamp above Reed's Basket Willow Swamp. Since then a few plants have been found in various places, viz., Linoleumville, Bull's Head, New Springville, Richmond, Great Kills, Eltingville, Huguenot, Bradley Road, Darcey's Woods and Silver Lake.

25. *Dryopteris Clintoniana* (D. C. Eaton).—The Clinton fern was originally reported from "Clove Lake Swamp. Sparingly." I have found it near South Avenue, in Darcey's Woods, near New Springville, and back of Richmond.

This fern is intermediate in character between the *D. cristata* and *D. Goldieana* (Hook.) A. Gray, and it has been allowed to pass as a variety of the former, as first described by Professor Eaton. It differs from *D. cristata* in being larger, broader in proportion to length, having stipe more scaly, pinnae more slender pointed, pinnules more falcate, and especially in having the *sori near the midvein*. This latter characteristic alone ought to be sufficient to give this fern specific rank. Its resemblances to *D. Goldieana* seem to me usually more apparent than to D. *cristata*. It differs from *D. Goldieana* in being usually narrower in outline, in the more horizontal position of the pinnae, in having the pinnules less falcate and the stipe less scaly, and the *pinnae broadest at the base*.

I have usually found Goldie's fern in the same pieces of woodland as the Clinton fern; so also the crested fern. This fact and the fact that it is intermediate between the other two suggest that the Clinton fern might have originated as a hybrid, and that it stands in a relation to these similar to that of Boott's fern in relation to *D. cristata* and *D. spinulosa*.

26. *Dryopteris Goldieana* (Hook.) A. Gray.—Goldie's fern was first reported from near South Avenue in the *Proceedings* of Nov. 14, 1903 (vol. ix, p. 2). I have found it also near New Springville (2 places) and in Darcey's Woods. Mr. Davis discovered it in a swamp back of Richmond on one of our joint excursions.

27. *Dryopteris marginalis* (L.) A. Gray.—The marginal shield fern or evergreen wood fern is met with occasionally in our deeper woods, more especially near New Springville and Richmond. It is much prized for greens to go with cut flowers, and thus it has become more rare than formerly, when it was reported common. Last summer the

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growth of this fern in the vicinity of New Springville was nearly destroyed.

28. *Dryopteris cristata x marginalis* Davenp.—This was first reported in the *Proceedings* of Jan. 1904 from near South Avenue. Before the end of last year (Dec. 27) I found a plant of this fern back of Richmond. I found quite a number of fine plants of this fern in a swamp near Suffern, N. Y., last summer, but to my knowledge the fern has not hitherto been reported as abundant anywhere; so we may count ourselves fortunate in having this fern on Staten Island.

29. *Dryopteris Pittsfordensis* Slosson.—This is my rarest find, thus far, on Staten Island, since this is a new fern of which only a few plants are known. It was first described in Rhodora, vol. vi, p. 75. (April 1904) and first reported from the Island in the *Proceedings*, vol. ix, p. 42. March 1905. Further comments on this fern are given by Professor L. M. Underwood in his American Ferns, vi, p. 197. 1906. (Reprint from the *Bull. Torrey Club*, vol. xxxiii, p. 197, 1906).

30. *Dryopteris Boottii* (Tuckerm.) Underw.—Boott's fern was reported in the *Proceedings* of Nov. 14, 1903 from near South Avenue (vol. ix, p. 2). Specimens have since been collected near Bradley Road, Bull's Head, Richmond, and in the previously mentioned swamp above Reed's Basket Willow Swamp. Some of these specimens belong to the form or variety of this fern described by someone, I do not know the author, as *Nephrodium Boottii* var. *multiflorum*. In our nomenclature this would read *Dryopteris Boottii multiflora*.

31. *Filix fragilis* (L.) Underw.—The brittle fern was originally reported as abundant near Egbertville. In the fall of 1902 I remember finding it along the north slope of Richmond Hill along the Egbertville Road. Last summer I searched this place without finding a single specimen of this fern where it seemed rather abundant in 1902. The only other place I have found the fern on the Island is Bloodroot Valley, where it is still quite abundant.

32. *Woodsia obtusa* (Spreng.) Torr.—This is one of my rarest finds on the Island; although the plant must have been not rare in the locality near Egbertville, from which it was reported in the original list without comment. Last summer I succeeded after careful search in finding one poor plant in the original locality on Richmond Hill near Egbertville, and one or two rather dwarf specimens in Bloodroot Valley.

The variety of *D. spinulosa* which I reported last year as var. *dilatata* I have purposely omitted since it is not authentic *dilatata*.

This gives us a list of at least 30 species of ferns from Staten Island

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(31 if Clinton's fern be recognized as a species). If we consider the fact that the Island has no limestone outcrop we must admit that this is a good showing.

The Island is fortunate in having a few little tracts of woodland that have been spared from destruction. Portions of woodlands near New Springville, Richmond, Great Kills, and along South Avenue contain small areas where the woodman's axe has been sparing in its work and nature has been left more or less undisturbed. These are veritable garden plots for some of our native plants and animals. One of these favored spots is to be found near South Avenue, where I have found 23 species of ferns on an area of less than 1½ acres.

These are the ferns found on this area:

1. *Botrychium obliquum* Muhl.
2. " *dissectum* Spreng.
3. " *Virginianum* (L.) Sw.
4. *Osmunda regalis* L.
5. " *cinnamomea* L.
6. " *Claytoniana* L.
7. *Pteridium aquilinum* (L.) Kuhn
8. *Woodwardia areolata* (L.) Moore
9. *Asplenium acrostichoides* Sw.
10. " *Filix-foemina* (L.) Bernh.
11. *Polystichum acrostichoides* (Michx.) Schott
12. *Dryopteris Noveboracensis* (L.) A. Gray
13. " *Thelypteris* (L.) A. Gray
14. " *cristata* (L.) A. Gray
15. " *Clintoniana* (D. C. Eaton)
16. " *Goldieana* (Hook,) A. Gray
17. " *marginalis* (L.) A. Gray
18. " *cristata x marginalis* Davenp.
19. " *Boottii* (Tuckerm.) Underw.
20. " *spinulosa* (Retz.) Kuntze
21. " " *intermedia* (Muhl.) Underw.
22. *Phegopteris hexagonoptera* (Michx.) Fee
23. *Dennstaedtia punctilibula* (Michx.) Moore
24. *Onoclea sensibilis* L.

A few rods away in the same piece of woodland I found also the maidenhair and the larger chain fern, making a total of 25 species on an area much smaller than Professor L. M. Underwood's noted Green Lake area near Jamesville, N. Y., where he found 28 species.

The sad part of this story is that the trees immediately adjoining this little area are being cut away; and unless some public spirited in-

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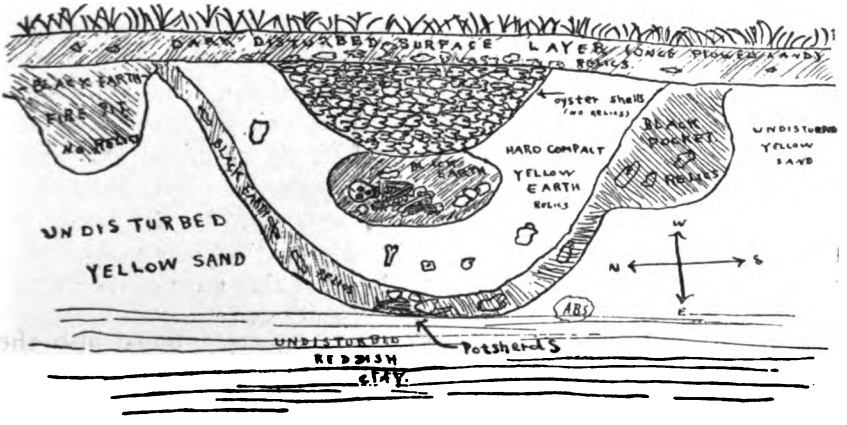
dividual or body take immediate steps to preserve such a remnant of virgin forest on the Island, this piece of woodland will share the fate of the others. Some day we will have portions of the Island set apart for parks, just as we have some already; but after the trees on an area have been cut down, and the native plants have vanished, there will be no opportunity to get a natural park, and our parks can at best be but imitations of nature like the great Central Park and Prospect Park.

Mr. Alanson Skinner exhibited a number of human bones and fragments of skulls and read the following paper:

AN INDIAN SKELETON FROM MARINERS HARBOR.

On May 12, 1906, while carrying on my investigations on the prehistoric Indian village site exposed by the building of Milliken Bros. iron foundry at Mariners Harbor, a grave was found exposed by recent enlarging of the railroad cut which runs through the plant.

The grave was found about 10 feet south of the first one which I had opened in that vicinity. It was about 7 feet broad by 5½ feet deep and of peculiar structure. A streak of black earth ran through the yellow sand and formed a bowl shaped pit. This streak was about 6 inches thick, broadening into pockets at both ends, and contained relics. At the bottom of the pit were some very large sherds, which were later restored and found to be the rim and most of the sides of a pot of typical Algonkin style. The bottom only is missing. On the sherds lay several stones, which indicates that the pot was whole or nearly so when placed in the grave, and that the stones had been cast upon it with the purpose of breaking it.



About 1 foot higher than the sherds and 3 feet to the west was found the skeleton of a person above average age, flexed as usual, heading

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north, with the face to the east. The skull was crushed, probably by the weight of the earth. No relics were found with it, but an oyster shell lay upon the bones of the hands, which were folded before the face. Fire-cracked stones also lay upon and near the skeleton. A small pocket of blackened earth immediately surrounded the skeleton, but the other soil within the black boundary was hard, compact, yellow earth. About 8 inches above there was a deposit of oyster shells about 2½ to 3 feet thick above the bones.

The Secretary read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND.

"Underground Water Resources of Long Island, New York. A. C. Veatch and others, *Professional Paper* No. 44, U. S. Geol. Survey 4to., pp. 394, pls. i-xxxiv and figs. 1-71 in text, Washington, D.C., 1906.

This paper begins with a chapter on the geology of Long Island as a necessary prelude to the intelligent understanding of the underground water condition. A discussion of the general principles relating to such waters is followed by an exhaustive discussion of the facts gathered in the course of careful investigations on Long Island, and the theoretical conclusions derived from them.

Data in regard to 919 wells are recorded and tabulated and their locations indicated on maps. From the information thus gathered and recorded the depths of the principal water-bearing horizons have been ascertained, the rate of flow measured, and the scources of supply more or less accurately determined or suggested.

Relatively shallow wells, confined to the superficial Tertiary and Quaternary deposits, were found to vary in their conditions according to local conditions, as would naturally be expected, and neither the depth at which water might be obtained, nor the amount of flow which might be expected, could be accurately predicted in a search for water in these deposits. The deeper wells, however, showed the presence of at least two well-defined water-bearing horizons, the lower of which, designated as the "Lloyd sand," belongs to the Cretaceous series of deposits. It is from the latter that most of the flowing wells of Long Island obtain their supply, and this horizon is shown to have a quite uniform dip or slope towards the southeast of about 80-100 feet per mile, with a strike approximately parallel with the coast line of the adjacent mainland.

On the north shore of the island, from Lloyd's Neck, westward, the top of this horizon is at a depth of approximately 200 feet below sea level while at Barren Island on the south shore it is at a depth of

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about 650 feet. On Plate II is depicted a map of Long Island and vicinity on which the surface locations of the flowing wells are indicated and those of equal depth are connected by lines, thus producing a series of curves of equal depth; and these curves are theoretically extended across the lower bay and the south shore of Staten Island into New Jersey, where they are connected with similar curves of known equal depth. This map and the conclusions to be drawn from it are of special interest to us in connection with the problem of our local water supply, inasmuch as the south shore of Staten Island, from the Narrows to Princes Bay, is included between the theoretical 200 and 300 feet curves. It is well known that the same Cretaceous deposits, at least in part, extended from New Jersey through Staten Island to Long Island, and the facts now brought to light in this paper strongly indicate that, unless some local conditions obtain which are not apparent, the water-bearing Lloyd sand ought to be found in this region at a depth of 200-300 feet below sea level.

The probable presence of this water-bearing horizon has been frequently mentioned in connection with our local water supply problem, and it is interesting to recall that a calculation of its theoretical depth below sea level was made some years ago, before the Long Island data had been obtained, and that this calculation gave a depth of 280-312 feet (*Proc. Nat. Sci. Ass'n S. I.*, vol. vii. p. 19, June 10, 1899), which is exactly that now indicated under the authority of the United States Geological Survey.—A. H.

The meeting then adjourned.

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ring less often. Some of specimens possess true gills, some are with dissepiments verging toward the porous, while others appear truly porous in character. Some immature forms were shown representing the gilled and the porous in the same specimen.

Mr. William T. Davis exhibited specimens of the brown-tailed moth, *Euproctis chrysorrhœa* Linn., and the gypsy moth, *Porthebria dispar* Linn.

Mr. Davis also commented on the fact that on December 15th the mild weather had caused ants to appear on the surface of the ground, and that on the same date the note of *Hyla pickeringii* Holbrook, had been heard.

The meeting then adjourned.

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PUBLICATIONS OF THE ASSOCIATION.

It is planned to issue these Proceedings in parts, according as material for publication is available, and to make four parts constitute a volume. They are the continuation of the Proceedings of the Natural Science Association of Staten Island, which were published consecutively from November 10th, 1883, to June 3d, 1905, and were included in nine volumes, separately indexed, as follows:

Volume I, pp. 74, Nov. 10th, 1883—Oct. 13th, 1888.
" II, " 87, Nov 10th, 1888—Oct. 10th, 1891.
" III, " 67, Nov. 14th, 1891—Oct. 14th, 1893.
" IV, " 86, Nov. 11th, 1893—Oct. 12th, 1895.
" V, " 97, Nov. 9th, 1895—Oct. 10th, 1896.
" VI, " 64, Nov. 14th, 1896—Oct. 8th, 1898
" VII, " 79, Nov. 12th, 1898—Oct. 13th, 1900.
"VIII, " 92, Dec. 8th, 1900—Oct. 10th, 1903.
" IX, " 51, Nov. 14th, 1903—June 3d, 1905.

The Proceedings are sent free to all active, life and honorary members and to patrons. To others the subscription price is 50 cts. per part, or $2.00 per volume.

Any of the above listed volumes may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a price of 50 cts. each will be charged:

Special No. 21, Vol. v, No. 5, Mch. 14th, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T, Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. vii, No. 15, Mch. 10th, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jun'r. Pamph., pp. 33, pls. i-iv.

Special No. 23. Vol. viii, No. 25, Oct. 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

The right is reserved to withdraw any numbers from sale at any time.

Subscriptions, and inquiries concerning the publications, should be addressed to

DR. PHILIP DOWELL,
CORRESPONDING SECRETARY,
Staten Island Association of Arts and Sciences,
Port Richmond, N. Y.

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VOL. I. January-May, 1907. Part IV.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS,

PUBLICATION COMMITTEE

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NEW BRIGHTON, N. Y.

[Issued September 20, 1907]

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MEMBERS OF THE BOARD OF TRUSTEES, 1907-1908.

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Arthur Hollick, *secretary*.

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The District Superintendent of Schools in the Borough of Richmond,
Darwin Long Bardwell.

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

Vol. I. January-May, 1907. Part IV.

REGULAR MEETING.

JANUARY 19TH, 1907.

The meeting was held at the Staten Island Academy, New Brighton.
President Howard R. Bayne in the chair.
Sixteen members were present.
The minutes of the meeting of December 15th, 1906, were read, corrected, and approved as corrected.

The following were elected to active membership:
Frederick Coonley, M. D., West New Brighton.
Arthur M. Harris, West New Brighton.
Michael J. Kane, Stapleton.
Lewis Nixon, Tompkinsville.

Mr. Wm. T. Davis called attention to the death, on January 3d, of Mr. Richard Fair, who was elected to active membership in the Association on January 20th, 1906.

Mr. Davis exhibited a quantity of chert fragments and read the following paper:

A CACHE OF INDIAN FLINTS.

Many Indian implements have been found at Watchogue, and it is evident that in old days the sand dunes along the edge of the salt meadows and handy to what are now known as Old Place, Mark's and

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Maggie's creeks, were much frequented by the aborigines. Most of the timber has been cut from these sand hills, some of which are now under cultivation, while others have lapsed into a semi-wild condition. Where the timber is gone the sand is shifted about by the wind and rain, and the arrowheads and other stone implements, that once belonged to the Indians, are thus brought to view.

While Mr. Alanson Skinner and I were looking for implements last year we noticed on the side of one of these sand hills several pieces of chert that had been split from the original mass of rock by some Indian, for they bore evidence of preparation and all were of the proper size for making arrowheads. Upon digging into the sand the 75 pieces of chert here exhibited were found together, where they had evidently been buried long ago by some Indian, who had failed to call for them. Most of the flints are about two inches long and from one-half to three-quarters of an inch in thickness, and in many instances the sides and ends have been squared off. It is evident from an inspection of the collection that the arrowhead manufacturer would be obliged to make points of very different shapes; he would clip out long and slim arrowheads or broad and triangular ones according to the chert in hand.

The interest in these prepared stones does not lie in the work bestowed upon them, though some skill was used in splitting them from the original mass of rock, but rather are they interesting from the fact of their having been buried together and thus exhibiting at this late day a custom of safe deposit storage by their one-time owner.

Mr. James Chapin exhibited a skin of the northern pine mouse and one of the common meadow mouse, for comparison, and read the following memorandum:

A STATEN ISLAND RECORD FOR THE NORTHERN PINE MOUSE.

Although originally described from Long Island, where it is said to be abundant, and having a range extending from Connecticut to Illinois, the northern pine mouse, *Microtus pinetorum scalopsoides* Aud. and Bach., has been captured but once on Staten Island, as far as I can ascertain. This first specimen was found dead in a field at Woodrow, by Mr. Isaac E. Wort, on January 6, 1907. The pine mouse is said to dislike stony, wet, or clayey soils, because of the difficulty of burrowing in them, and for this reason it probably inhabits only those parts of Staten Island where a sandy soil predominates, as at Tottenville, Rossville, and Watchogue; but careful search in those localities would perhaps show it to be quite common there.

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Mr. Stafford C. Edwards exhibited specimens of oak wood serving as the host of a fungus and read the following memorandum:

AN INTERESTING STATEN ISLAND FUNGUS.

These specimens are pieces of oak wood containing mycelia and fruit disks of *Chlorosplenium æruginosum* (Oeder) De N., concerning which fungus the following is quoted from Freeman's "Minnesota Plant Diseases," p. 257: "The mycelium penetrates deeply, being especially prominent in the spring wood. It colors the wood a beautiful, deep verdigris green, varying in shade in the different parts. It is more abundant in the summer wood, thus accentuating the grain. The rot works very slowly. Wood, so colored by artificial infection, is used in the arts in the manufacture of Tunbridge ware. It is also used for the extraction of the pigment which resides both in the mycelium and the adjacent walls." The green coloring is well shown in these specimens. This fungus belongs to the Ascomycetes, the upper surface of the copper-green ascocarps bearing the sacks containing the spores. The fruit disks I have found but once on Staten Island, at Great Kills. Prof. Underwood says in his "Moulds, Mildews and Mushrooms" that they are not common.

NOTES AND COMMENT.

Mr. Wm. T. Davis exhibited acorns, hickory nuts, and cocoons, showing the work of squirrels in their search for insect larvae, which was made the subject of an article entitled "Insects as the Food of Squirrels" in the *Canadian Entomologist*, vol. xxxix, Jan. 1907, p. 16. Reprints of the article were distributed by Mr. Davis.

Dr. Arthur Hollick remarked on the meat-eating habit of a chipmunk which he had in captivity for many years and whose longevity was attributed to the occasional diet of meat which it enjoyed. A note on the subject was published in *Science News* for January, 1879.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "The Cretaceous Flora of Southern New York and New England." Arthur Hollick. *Monographs U. S. Geol. Survey*, vol. l, 4to, cloth, pp. 219, pls. i-xl, Washington, Govt. Printing Office, 1906.

This volume is the final result of about fifteen years of persistent systematic work by the author in his investigation of the Cretaceous fossil flora of Staten Island, Long Island, Block Island, Martha's Vineyard, Nantucket, and the Elizabeth Islands, together with incidental

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correlation work northward on Cape Cod and southward in New Jersey. In the introductory chapter is included an account of the previous work of others in the region, and their conclusions, which is of interest historically and also in showing the evolution of scientific thought and the changes that have taken place from time to time in the interpretation of facts during the past one hundred and thirty years.

Numerous references to Staten Island may be found in the text, and one of the quotations is an abstract from the first number of the *Proceedings of the Natural Science Association of Staten Island*, issued November 10, 1883, describing the discovery of fossil leaf impressions on the shore at Tottenville.

The importance of fossil plants in determining the geologic age of strata and in correlating them is emphasized throughout and is indeed one of the main objects of the monograph. A table of correlations on page 29 gives a condensed epitome of the views of a number of recent authorities and the conclusions of the author. The entire insular flora is regarded as included in the Raritan and Cliffwood formations, with possibly some of the Mattewan, and to be Cenomanian and Senonian in age.

Two hundred and twenty-two species of fossil plants are described and figured, of which Staten Island is represented by six from Arrochar, five from Princes Bay, one from Richmond Valley, thirty-six from Tottenville, thirty from Kreischerville, and one from Green Ridge. The descriptions and figures of these were based upon the specimens in our museum, and among these the following type specimens may be noted: *Myrica Davisii*, *Myrica Hollicki*, *Platanus aquehongensis*, *Pistacia aquehongensis*, *Acer minutum*, *Kalmia Brittoniana*, *Phyllites poinsettioides*, *Williamsonia Riesii*, *Carpolithus euonymoides*, *Carpolithus vaccinioides*, and Rhizomorphs.

It is unfortunate that the text of this work was prepared previous to the recent extensive discoveries at Kreischerville, which have added many more species and have still further demonstrated the scientific value of our local Cretaceous deposits.

A. H.

The meeting then adjourned.

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REGULAR MEETING.

FEBRUARY 16TH, 1907.

The meeting was held at the residence of Mr. Howard R. Bayne, New Brighton.

President Howard R. Bayne in the chair.

Thirty-two members were present.

The minutes of the meeting of January 19th, 1907, were read and approved.

Theodore Castle Leng, West New Brighton, was elected to active membership.

Mr. William A. Shortt read a paper on THE LEGAL STATUS OF MIRACLES AND METAPHYSICS, but did not present it for publication.

Mr. William T. Davis exhibited herbarium specimens of a number of recognized hybrid oaks and a newly discovered one, and read the following paper:

AN ADDITION TO THE LIST OF HYBRID OAKS.

Near Farmingdale, Monmouth Co., N. J., there is a piece of woodland containing many interesting hybrid oaks. The willow oak, *Quercus Phellos* L., as might be supposed from its known tendency to cross with other oaks, is one of the species prominent in the several combinations observed. There are present a number of large oaks of this species, also many scrub oaks, *Quercus nana* (Marsh.) Sarg., and fingered or Spanish oaks, *Quercus digitata* (Marsh.) Sudw.

Quercus nana x *Phellos* is recorded as an observed hybrid in Britton and Brown's "Illustrated Flora," and there are several small trees growing like *Quercus nana* that display the characters of both the willow oak and the scrub oak. These trees bear acorns, and the same branch often has leaves like those of the willow oak as well as many more having the characters of the scrub oak. The leaves have sharp bases in almost every instance and are white-downy beneath.

There are several other trees in the same woods, that while they undoubtedly have the willow oak as one of their parents are not related to the scrub oak but more probably to *Quercus digitata*. The leaves are white-downy beneath, three or four inches long, and of varying widths up to two inches. Some of them are like those of the willow

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oak, and some are lobed, but the most noticeable feature is the rounded base. A rounded base to the leaf is not a usual character of either the willow oak or of the scrub oak, but is often quite prominent in the fingered oak, as is also the white pubescence on the under side of the leaves. The acorns of the scrub oak and of the fingered oak are of about the same size, but in many instances in the trees mentioned they have not as flat cups as in the willow oak.

On account of the above characters it is suggested that *Quercus digitata* x *Phellos* should be given a place in the list of hybrid oaks.

A single hybrid oak with characters much like those just described was found with the Bartram oaks and other hybrids at Richmond Valley, Staten Island, some years ago, and commented on in the *Proceedings of the Natural Science Association* for October 1888. While the tree resembled those above mentioned, it may be stated that no specimen of *Quercus digitata* has been found in the vicinity.

It may be said in conclusion that what appears to be the difficulty in considering the so called Bartram oak, *Quercus heterophylla* Michx., is that two or more hybrids have been mixed under the same name. As proof of this we have only to consider the figure given in Sargent's "Manual of the Trees of North America" in connection with what we know to be the conditions at Richmond Valley, where the large, flat-cupped acorns borne by some of the hybrids, together with the shape of the leaves, indicate the cross between *Quercus Phellos* and *Quercus rubra*. Figures of some of these acorns by Dr. Hollick, may be found in the *Bulletin of the Torrey Botanical Club*, vol. xv, Dec. 1888, pls. lxxxiv, lxxxv, and compared with the figures by Sargent above mentioned.

SPECIMENS EXHIBITED.

Mr. Davis exhibited ears of pop corn with mixed red and yellow grains of several colors, the result of cross-fertilization due to raising plants from red and yellow seed in close proximity.

Mr. Howard H. Cleaves exhibited a living short-eared owl, *Asio accipitrinus* (Pall.), captured at Princes Bay on February 10th.

Mr. Alanson Skinner exhibited and discussed examples of different varieties of Indian war clubs.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "The Wound Reactions of Brachyphyllum." Edward C. Jeffrey. *Annals Bot.*, vol. xx, Oct. 1906, pp. 384-394, pls. xxvii, xxviii.

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This contribution may be regarded as supplementary to a previous paper on "Affinities of Certain Cretaceous Plant Remains Commonly Referred to the Genera Dammara and Brachyphyllum." reviewed in the *Proceedings* of April 21st, 1906. Both of these papers are of special interest to us, aside from their scientific value, for the reason that the lignitic material upon which they were based was collected at Kreischerville and has been exhibited and discussed at several of our meetings during the past two years.

The net results obtained by the author in his microscopic examination of *Brachyphyllum* are that the normal wood does not contain resin canals but that traumatic resin canals, represented by amber-filled interstices in the lignites, were produced as the result of wounds or injury to the wood. In this respect the genus differs from the living genera *Dammara* and *Araucaria*, although in other respects it has a woody structure which is distinctly Araucarian. Lignites of this latter type were obtained from the Drummond pit, however, which in all probability belong to *Araucaria* or some closely allied genus.

A. H.

II. Under the heading "Palaeobotanical Papers," in an unsigned account of the meeting of the British Association for the Advancement of Science at York, England, last summer, and published in the *New Phytologist*, vol. v, 1906, pp. 177-188, may be found the following note, on p. 186: "On Saturday morning [Aug. 4] a number of miscellaneous papers were taken [before Sec. K., Botany], among which were two important palaeobotanical communications." Of interest to us is the fact that one of these, by Dr. E. C. Jeffrey, on "The Structure and Wound-Reactions of the Mesozoic Genus Brachyphyllum," in all probability essentially the same as the contribution last reviewed, was likewise based upon the Kreischerville material. This material aroused great interest abroad and we are to be congratulated on having first brought it to light and on having duplicate specimens in our museum collection.

The subject is also briefly mentioned in *Nature*, vol. lxxiv, 1906, p.576.

A. H.

The meeting then adjourned.

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REGULAR MEETING.

MARCH 16TH, 1907.

The meeting was held at the residence of Mr. William Allaire Shortt, Tompkinsville.

In the absence of the President the meeting was called to order by the Recording Secretary and Mr. Shortt was elected chairman *pro tem.*

Eighteen members were present.

The minutes of the meeting of February 16th, 1907, were read and approved.

The following were elected to active membership:

William I. Seaman, New Brighton.

Clifford B. Griswold, New Brighton.

The Secretary called attention to the recent sudden death of Louis Balmat Baker, LLB., M. D., on Tuesday, February 26. Dr. Baker was elected to active membership in the Association on October 21, 1905. He was a regular attendant at the meetings and always expressed great interest in the proceedings. In his death the Association has lost a loyal and enthusiastic friend and supporter.

The Secretary announced that a public lecture under the auspices of the Association had been arranged for the evening of April 12th, at the Curtis High School, on the subject of forest preservation, by Hon. James S Whipple of the New York State Forest, Fish and Game Commission, and that the President had appointed a committee of arrangements, consisting of Mr. Thomas A Fulton, chairman, Mr. Chas. H. Ingalls, and Mr. George S. Humphrey, to attend to all details of the lecture.

Mr. Leopold A. Comacho read the following paper by invitation:

OBSERVATIONS ON TWO WATER SPOUTS IN RARITAN BAY.

On the 23d of June, 1906, I was invited by Mr. Frederick Baldwin to fish during the afternoon at Giffords. In accordance with our arrangement I met Mr. Baldwin at Giffords at two o'clock in the afternoon. He came around from New Brighton in his power-launch, an eighteen foot boat, and he had with him Allister Morris, a young man the son of a neighbor. They had had a rather strenuous time getting around on account of thunder squalls and had been obliged to run in to the pier at Midland Beach during one of the most severe of them.

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We started out with bait and rods about 2:15 o'clock and fished for a short time off the point without success. We took up our anchor and went down to the old buoy on the edge of the Princes Bay channel and then ran in to the black buoy on the same channel.

It was then beginning to thicken up to the southeast, so that we again took up anchor and ran in to a point about one thousand yards off the Terra-Marine Club. About this time it was thick with clouds about two hundred feet above the surface. There was not much wind. The clouds were particularly thick over the red buoy, our second anchorage. It began to blow from the northeast and rain. It looked so threatening that we decided to run for shelter back of Tottenville. There was a large yawl running down just outside of us under jib and jigger.

With the rain came hail, at first in pieces about one-quarter inch largest dimension; afterwards these hailstones increased to about two in the shorter axis. They seemed to strike at about five or six feet apart and made holes in the water.

We were then running down the beach with the yawl outside of us. The wind had nearly all gone down. I was steering, young Morris was amidship, and Mr. Baldwin was watching the engine aft. We were in oil skins and huddled up into as small a space as possible, as those hailstones hurt when they struck. Mr. Baldwin was hit by one of them and had a lame shoulder for several days afterwards.

The atmosphere below the clouds was comparatively clear. Suddenly the clouds over the red buoy, before mentioned, began to revolve in the direction of the movement of the hands of a clock, in a circle of about two hundred to two hundred and fifty feet in diameter. These clouds let down a long finger of mist, this finger was met by a solid cylinder of water about forty feet in diameter and of the same hight, out of the center of which another finger went up and met the descending finger from the clouds. The meeting of the two formed a complete water spout which went off to the southeast in most stupendous gyrations.

The yawl, being nearest to the point, dropped sails and anchor with the most extraordinary celerity, and Mr. Baldwin called out to me "Put the boat ashore. I never was very well acquainted with water spouts and don't want any closer knowledge of them."

The spout by this time had changed its direction of travel and was coming our way. I headed the boat for the beach. The spout after coming our way for probably a minute changed its course again to the

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southeast and disappeared in the mist. We had this one in sight probably about five minutes.

We were still running for the beach when young Morris called out "There is another one." So there was. This one was a repetition of the previous one, although we saw more of it, and it was more perfect. By perfect I mean more perfect in shape. When you are in an eighteen foot boat half a mile from shore with eighteen or twenty feet of water between you and the bottom, no water spout can be perfect. The last spout disappeared also to the southeast.

We put the boat ashore and waited on the beach for the weather to clear a bit, and then ran home through the Kills.

I saw afterwards in the papers that the spouts had done much damage to fishing craft in the Shrewsbury region and that considerable loss of life had attended them.

The phenomena were discussed by Mr. Howard H. Cleaves, who remarked on the damage done by the hail to the windows of the S. S. White Dental Works at Princes Bay and to windows of a railroad train standing at Princes Bay station. Mr. Cleaves stated that the hailstones were irregular in shape, flattened, about three-quarters of an inch in diameter and composed of a nucleus of white ice with clear ice on the exterior. A supply was collected and utilized for household purposes by filling an ice box with them.

Mr. James Chapin exhibited a number of bird skins and read the following paper:

AN ORNITHOLOGICAL REVIEW OF THE WINTER OF 1906-07.

The bird-life of the vicinity of New York during the past winter has been doubly interesting; first, because of the mild weather in the early part of the season, and secondly, on account of the occurrence of several irregular winter visitants, namely, pine grosbeaks, *Pinicola enucleator canadensis* (Cab.), white-winged and red crossbills, *Loxia leucoptera* (Gmel.) and *L. curvirostra minor* (Brehm.) redpolls, *Acanthis linaria* (Linn.), and pine finches, *Spinus pinus* (Wils.).

The warm weather in the months of November and December, 1906, and most of January, 1907, besides delaying the departure for the South of some summer and transient birds, was also accountable for the occurrence, in the middle of winter, of a few others.

Some late records for birds passing Staten Island in the fall migration are as follows:

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Grasshopper sparrow, *Coturniculus savannarum passerinus* (Wils.), Oakwood, Oct. 27, 1906.

Sharp-tailed sparrow, *Ammodramus caudacutus* (Gmel.), (6 individuals) Oakwood, Nov. 6, 1906.

Seaside sparrow, *Ammodramus maritimus*, (Wils.) Oakwood, Nov. 6, 1906.

Northern yellow throat, *Geothlypis trichas brachidactyla* (Swains.), Great Kills, Nov. 10, 1906.

Fox sparrow, *Passerella iliaca* (Merr.), Clove Valley, Dec. 21, 1906.

While I know of no flickers, *Colaptes auratus luteus* Bangs, actually wintering on the Island in the past season, yet I saw two on Nov. 30, four on Dec. 1, and heard one on Dec. 8, all in quite widely separated sections.

From Dec. 2 to 6, Bonaparte's gull, *Larus philadelphia* (Ord), was quite abundant in the upper New York Bay. On one trip across on the municipal ferry, I estimated the number seen as at least 150.

Again, on Dec. 15, I saw about 50 of these little gulls at Great Kills; and on Jan. 1, Mr. Howard Cleaves and I found them very numerous between Princes Bay and Great Kills. No more were observed, however, for the rest of the winter.

On Dec. 25, in a field near the Mill Road, New Dorp, there were two male and one female red-winged blackbirds, *Agelaius phoeniceus* (Linn.), and on Jan. 23 one male in the same place.

Mr. R. C. Murphy, of the American Museum of Natural History, saw a belted kingfisher, *Ceryle alcyon* (Linn.), on Jan. 1, at Princes Bay. Two swamp sparrows, *Melospiza georgiana* (Lath.), came under my observation, at Rossville, on Jan. 13, and at Mariners Harbor, Feb. 2; and two hermit thrushes, *Hylocichla guttata pallasii* (Cab.), Feb. 3 and 23, at Rossville and Richmond, respectively. Bluebirds, *Sialia sialis* (Linn.), were somewhat more common than usual, flocks of four or five at a time being seen quite regularly throughout the winter.

In the year 1891, and for several succeeding years, Mr. Wm. T. Davis found the Carolina wren, *Thryothorus ludovicianus* (Lath.), quite a common bird in many parts of Staten Island, especially near Richmond, but it has now become so rare that previous to this winter I had met with but two individuals, both in the Clove Valley. On Feb. 16, 1907, I had the pleasure of seeing two more on a hillside near Richmond.

Pine finches have been quite numerous; the first to be seen were in the Clove Valley, Oct. 22. In the winter of 1903-04 there was a sim-

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ilar visitation of these finches, but in greater numbers. The beach at Oakwood has seemed very attractive to them, for there they could find abundant food in the seeds of a large goldenrod, *Solidago sempervirens* L.

Probably the last time before this winter that redpolls visited this Island in large numbers was the winter of 1887-8, when they attracted the attention of Mr. Wm. T. Davis. On Dec. 1, 1906, near Woodrow, I was surprised by a solitary redpoll, but not until Feb. 10, 1907, at Watchogue, did I see any more. Since then, however, they have appeared at Richmond, New Springville, and in the Clove Valley, where the last were seen on March 9. The seeds of the white birch and alder seem to constitute a large percentage of their food, although the one seen on Dec. 1 was busy extracting the seeds of the sweet-gum.

While pine grosbeaks and crossbills were reported as quite numerous in Massachusetts and on Long Island, still my search for them on Staten Island was unrewarded. Horned larks, *Otocoris alpestris* (Linn.), were far less common this winter than during the two previous winters, only one flock of any size being observed. Mr. Cleaves reports snow buntings, *Passerina nivalis* (Linn.), at Princes Bay, January 6, February 12, and March 3, 1907, and on March 15, I saw two at Great Kills.

On the beach near Oakwood, March 2, 1907, I had two good views with a field-glass of a glaucous gull, *Larus glaucus* (Brunn.). Staten Island lies at the southern limit of this bird's winter range, and this is, I believe, the first one to be reported from here.

A few other birds of interest are: a saw-whet owl, *Cryptoglaux acadica* (Gmel.), and three northern shrikes, *Lanius borealis* Vieill., which were noted; but the most interesting records are doubtless those of the red-winged blackbirds, kingfisher, and the redpolls.

Mr. William T. Davis exhibited specimens and read the following paper:

NOTEWORTHY STATEN ISLAND INSECTS, WITH ADDITIONS TO THE LOCAL LISTS.

Conocephalus lyristes Rehn. Two specimens of this cone-headed grasshopper, which is an addition to the local list, have been found on the Island. One was observed last August engaged in eating the seeds at the top of a tall culm of *Panicum Crus-galli* L. in a marsh near Long Neck.

Conocephalus atlanticus Bruner. Several specimens that appear to belong to this species, which resembles small *C. triops* L. (*C. dissimilis*

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Sew.) have been found on the Island. This, with *C. lyristes*, is the sixth species of *Conocephalus* to be recorded from the Island.

Panchlora viridis Burm. A specimen of this delicately colored West Indian cockroach was presented to me by Mr. James Chapin. It was collected in a home on Staten Island, about the first of March, 1905. While the species is new to our local list, it has previously been reported from the city of New York and vicinity and is frequently imported with tropical fruit.

Nehalennia irene Hagen. Two examples of this small but brightly colored dragonfly were found on the Island in June. It is an addition to the local list.

Necrophorus pustulatus Hersch. This burying beetle was found beneath an electric light at Egbertville on July 19, 1905. The species is not mentioned in the New Jersey, Washington, or the Cincinnati lists of Coleoptera. It is, however, recorded from the vicinity of Buffalo, N. Y.

Anisotoma alternata Melsh is another rare beetle, also belonging to the Silphidae. A specimen was taken on the Island in October several years ago. This has been presented to Mr. Charles W. Leng, who identified the insect.

Polyphylla variolosa Hentz. A specimen of this large lamellicorn beetle was found near an electric light at Egbertville last June. Several specimens have been collected by Mr. Oscar Fulda about the lights at South Beach.

Terias nicippe Cram. This butterfly has not peen recorded from the Island for a number of years, but during the summer of 1906 it was observed in several places. On June 24 a male was captured near New Springville; on August 4 another male was seen on Long Neck; and on September 9 four or five were seen flying about the plants of *Cassia marylandica* L. in Clove Lake swamp.

NOTES AND COMMENT.

Mr. Davis showed and explained a cheap and easy method of mounting and exhibiting insects by placing them on cotton batting in cigar boxes and holding them in place by the pressure of closely fitting glass covers secured by thin wire nails or pins inserted through the sides of the boxes.

Mr. George S. Humphrey presented a series of photographs of old Staten Island houses and landscape views taken by Mrs. C. W. Hunt.

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Mr. Henry B. Brownell exhibited a unique fern dish made from the head, tail, and carapace of a South American armadillo.

The meeting then adjourned.

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REGULAR MEETING.

APRIL 20TH, 1907.

The meeting was held at the residence of Hon. Lester W. Clark, New Brighton.

President Howard R. Bayne in the chair.

Twenty-two members were present.

The minutes of the meeting of March 16th, 1907, were read and approved.

The following were elected to active membership:

George H. Tredwell, Port Richmond.

John F. Braniff, New Brighton.

The public lecture committee reported that the lecture by Hon. James S. Whipple, Forest, Fish and Game Commissioner of the State of New York, on "The Preservation of the Forests," was given at Curtis High School on Friday evening, April 12th, before a large and appreciative audience.

The subject of the destruction of plant life on Staten Island by fire, indiscriminate cutting of trees and underbrush, etc., was discussed informally, and on motion it was

Voted: that the President be authorized to appoint a committee to consider and report on the subject of the destruction of our native vegetation and to suggest any measures that might be undertaken by the Association to prevent such destruction; said committee to consist of the public lecture committee and three other members.

The President appointed Hon. Lester W. Clark, Mr. William T. Davis, and Mr. James Chapin the three members to act with Mr. Charles H. Ingalls, Mr. George S. Humphrey, and Mr. Thomas A. Fulton as such committee, with Mr. Fulton chairman.

The Secretary called attention to the fact that the next meeting of the Association would be the annual meeting, at which five trustees were to be elected.

Voted: that the President be authorized to appoint a committee to suggest nominations for trustees to be voted for at the forthcoming annual meeting of the Association.

The President appointed Mr. Darwin L. Bardwell, Mr. Thomas A. Braniff, and Mr. William Mac Donald as such committee.

The following amendments to the By-Laws were adopted:

Resolved: that the final clause of Section 2, By-Law III, be amended so as to read as follows:

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Any active member one year in arrears of dues shall by reason thereof stand suspended until such arrears of dues are paid, and if these are not paid within six months thereafter such member may be dropped from the roll by a majority vote of the trustees present at any meeting of the Board.

Resolved: that Section 6, By-Law III, be amended so as to read as follows:

Sec. 6. *Patrons:* Any person contributing at any one time one hundred dollars ($100.00) to the general funds of the Association, or other property to the value of not less than two hundred dollars ($200.00), provided such property be accepted by the Board of Trustees, shall be a patron, and on election by the Board shall enjoy all the privileges of life membership. Any active or life member may, upon making such contribution of money or other property, become a patron without thereby forfeiting any of the privileges of such membership.

Mr. William T. Davis exhibited specimens and read the following paper on

THE DISAPPEARING WILD PLANTS OF STATEN ISLAND.

In their preface to the "Flora of Richmond County, New York," published in 1879, Hollick & Britton state that "The Elliot Collection, referred to often, is a collection made for the late Dr. S. Elliot, of New Brighton, which is very valuable for containing many species whose localities are now destroyed, and the plants themselves extinct." In the list referred to there are a number of plants mentioned as then growing on the Island that today may be accurately commented upon in the words applied to the older Elliot collection in 1879.

In 1879 the juniper (*Juniperus communis* L.) is stated to be represented by "one tree of the erect variety" growing in the cedars near New Dorp. This tree lived until 1891. Mr. Sharrot has informed me that he remembered when junipers were numerous, the trees being scattered through the groves of red cedar on the south side of the Island.

In the *Proceedings of the Natural Science Association* for November 12, 1898, Dr. N. L. Britton gives an account of the finding of what presumably were white cedar logs, by Mr. John J. Crooke, in a swamp at Great Kills. This tree (*Chamaecyparis thyoides* L.) had not been reported as growing on Staten Island. Mr. Daniel Wandel has informed me that when he was a boy there were many white cedar trees growing in a swamp at what is now called Clifton. The swamp, since

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it has been drained and built over, has received the nickname of "Poverty Hollow." Mr. Wandel stated that the white cedars grew also in another swamp to the southwest of the Meyer place on the Fingerboard Road. Mr. John L. Garretson, who died last August in the 92nd year of his age, also mentioned the circumstance of the white cedars growing near the Fingerboard Road. The southern white cedar grows in swamps much further north, so there is nothing remarkable in its having occured on Staten Island.

Thoreau, in a letter dated May 22, 1843, and written from what is now called Emerson Hill, mentioned that the scarlet paintedcup (*Castilleja coccinea* L.) was "very common in the meadows." He adds "The whole island is like a garden, and affords very fine scenery." The scarlet paintedcup is said in the catalog of 1879 to be "very abundant in the Clove Lake Swamp." It is now exterminated, as far as known. Under this same head of exterminated plants that once formed part of our woodland flora, should probably be included the following species. The letters "E. C." after many of the names, indicate that the plants were recorded in the Elliot collection.

Coptis trifolia (L.) Salisb. Goldthread. "Near Silver Lake, 1864 (Elliot Collection), not since found.—'Ponds south of R. R. between Clifton and Garretson's' (I. H. Hall, in T. C. B.)."

Sarracenia purpurea L. Pitcher plant. Mr. John J. Crooke has informed me that he collected pitcher plants a number of years ago, in a swamp near Giffords.

Bikukulla Cucullaria (L.) Millsp. Dutchman's Breeches. Near Garretson's; not common in 1879.

Bikukulla canadensis (Goldie) Millsp. Squirrel Corn. E. C.

Dentaria diphylla Michx. E. C.

Drosera rotundifolia L. Round-leaved Sundew. Clove Lake Swamp in 1879.

Drosera longifolia L. Oblong-leaved Sundew. E. C. *D. intermedia* Hayne was probly the species found.

Geranium Robertianum L. Herb Robert. E. C.

Polygala lutea L. Orange Milkwort. E. C.

Polygala polygama Walt. E. C.

Galactia regularis (L.) B. S. P. Milk Pea. E. C.

Prunus americana Marsh. Wild Yellow Plum. Near Clove Lake; rather rare in 1879.

Prunus virginiana L. Choke Cherry. E. C.

Rubus cuneifolius Pursh. Sand Blackberry. Seems to have been

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exterminated at the several stations where it occured, near Tottenville.

Parnassia caroliniana Michx. Abundant in a swamp near Clove Lake in 1879.

Mitella diphylla L. Miterwort. E. C.

Aralia hispida Vent. E. C.

Linnaea borealis L. Twinflower. E. C.

Aster acuminatus Michx. Mountain Aster. E. C.

Gifola germanica (L.) Dumort. Cotton Rose. E. C. and State Flora.

Chiogenes hispidula (L.) T. & G. Creeping Snowberry. Rare. A small patch near Clove Lake in 1879.

Hudsonia ericoides L. Used to grow at Tottenville.

Gaylussacia dumosa (Andr.) T. & G. Grew at Tottenville in 1879.

Pyrola secunda L. Used to grow near Richmond Hill Road, west of Richmond.

Arctostaphylos Uva-Ursi (L.) Spreng. Bearberry. Sparingly near Tottenville in 1879.

Rhododendron maximum L. Great Laurel. Reported to have grown at Tottenville.

Ilex glabra (L.) A. Gray. Inkberry. In 1879 it was abundant near Clove Lake, but not common elsewhere.

Koellia incana (L.) Kuntze. Hoary Mountain Mint. E. C.

Asclepias quadrifolia Jacq. Four-leaved Milkweed. Described as frequent in 1879.

Menyanthes trifoliata L. Buckbean. E. C.

Aristolochia Serpentaria L. Virginia Snakeroot. E. C.

Habenaria psycodes (L.) A. Gray. Smaller Purple-fringed Orchis. Reported as rather common in 1879.

Pogonia ophioglossoides (L.) Ker. Rose Pogonia or Snakemouth. Clove Lake Swamp in 1879.

Corallorhiza odontorhiza (Willd.) Nutt. Two localities are given for this orchid in 1879.

Cypripedium reginae Walt. Showy Ladies' Slipper. Reported in 1879 as growing near the fort at Clifton.

Trillium erectum L. Ill-scented Wakerobin. E. C.

Melanthium virginicum L. Bunchflower. It was common in Clove Lake Swamp in 1879 and for some years after.

A number of the species mentioned above were confined to a single locality, but the list, which might be added to, is, however, sufficient to show that a considerable number of our woodland plants have been

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exterminated since 1864 or thereabouts.

The work of destruction has gone on much faster in recent years, since our woodlands have been so often and unnecessarily burned over, and we have now a number of plants that are nearing extermination. Among these may be included *Aquilegia canadensis* L., *Angelica atropurpurea* L., *Diervilla Diervilla* (L.) MacM., *Gaultheria procumbens* L., *Epigaea repens* L. (Trailing arbutus), *Staphylea trifolia* L., *Asclepias variegata* L., *Orchis spectabilis* L., *Corallorhiza multiflora* Nutt., and *Tipularia unifolia* (Muhl.) B. S. P. Indeed it is quite likely that the last year or two has seen the extermination of some of these species.

During recent years *Hepatica Hepatica* (L.) Karst., *Kalmia latifolia* L., and *Ilex opaca* Ait., the American holly, have become very much reduced in numbers.

There are only a few trees of the hop hornbeam remaining, and most of the butternuts along Sandy Brook have been cut down. Some of the interesting hybrid oaks near Richmond Valley have also been used for firewood. Most of this destruction is wrought through ignorance, such as the burning of the woods, and often when a man acquires a piece of land, he first cuts down all of the native trees, plows it up, and then plants others, usually maples, which generally seem to be considered the most desirable. At the site of the Richmond Valley oaks a fine tree of the hybrid oak *Quercus Rudkini* was cut down and an ordinary tree planted in almost the same spot.

In 1879 five species of *Lycopodium* or clubmoss were recorded as occurring on the Island, and some of them were quite common even a few years later, but they were among the plants that were effected most disastrously by the repeated burning of the woods. *Lycopodium clavatum* L. has no doubt been exterminated, and *L. lucidulum* Michx. and *L. obscurum* L. have become scarce. *Lycopodium complanatum* L. is the most common of those remaining.

From the foregoing it will be seen that since 1864, or thereabouts, over forty species of plants, that once grew on the Island more or less plentifully, have been exterminated, and at the present day the destruction is going on faster than ever. It is an accurate statement that at least one species of woodland plant is lost to Staten Island every year.

Dr. Philip Dowell has well commented upon the distribution of our Staten Island ferns in these *Proceedings* for May, 1906, and has urged the setting apart of areas of woodland to serve as natural parks. The difficulty seems to be, however, that the average man is not acquainted with the wild plants and their requirements, and through ignorance de-

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stroys them. Even if we should save some of the natural tracts it is to be feared that the necessity of adopting the policy of "Hands off" would not be appreciated by those in authority. It is generally considered that all parks must have something done to them, such as the cleaning up of the leaves or the cutting down of some of the trees. which of course endangers the life of the lesser plants and from our point of view makes the place less interesting.

The ideal way to treat a piece of natural woodland would seem to be to let it entirely alone, to get as many books as possible about what it contains and with these and observation make a study of what is sure to be an interesting fauna and flora. While this plan of dealing with Nature would seem to apply more particularly to private woodland, yet there is a successful natural park in the city of Portland, Oregon. The park board of the Macleay Park have "desired that not a fern, flower, leaf, twig, or branch of any name or nature be disturbed," and fortunately there are many citizens who approve of this plan. We quote from Mr. William Palmer's account of this park in *The Plant World*, for January, 1906: "An old resident of Portland had left the ground, less than two hundred acres, to the city on condition that a path should be maintained through its wilderness, but that the natural beauty should not be changed. The Park Board of the city, headed by the mayor, is evidently faithfully carrying out the intent of the donor. The watchman, deeply interested in the matter, keeps the path clear and as dry as possible, cuts partly through fallen logs, so as to permit easy stepping, removes stones, and trims the side of the path where the bank is steep; provides for the drainage across the path, especially where the ground is soggy, but invariably leaves everything untouched except in the narrow winding way."

With a park of this character on Staten Island, which would cost less to maintain than any other kind, we might at least preserve a small portion of our woodland flora, our native plants would not all die out, and we need not then average a loss of a species every year, as at present.

Mr. Davis also read the following notes on the

TIME OF ARRIVAL OF THE BARN SWALLOW ON STATEN ISLAND.

The following dates of arrival of the barn swallow (*Hirundo erythrogaster* Bodd.) at a barn on the south side of the Island, near Dongan Hills, have been furnished me by Mr. Wm. A. Galloway. I

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regret to say that I neglected to inquire about the swallows for the years 1899 and 1900.

April 28, 1892.
" 25, 1893.
" 26, 1894. They commenced to sing on the 29th.
" 24, 1895.
" 20, 1896. Very warm.
" 24, 1897. Swallows seen on the 18th but they did not go in the barn until the 24th.
" 30, 1898. Flying about the barn. Cold for past week.
May 2, 1901. Late spring.
April 30, 1902. Seen flying about the barn, but did not go in.
" 30, 1903.
" 24, 1904.

Mr. Howard H. Cleaves exhibited a skin of a male woodcock and read the following paper:

A FEW NOTES ON THE AMERICAN WOODCOCK, *Philohela minor* (Gmel.).

This bird is known generally to a great many people in a vague sort of way, but few have become intimately acquainted with it. Exhaustive and accurate information relative to the habits and traits of the woodcock is far more difficult to accumulate than it is to record notes on birds that appear to us to be more numerous.

In the spring the woodcock returns from the South as soon as the frost is out of the ground, and is a resident until cold weather again returns in the fall. It begins to breed almost as early in the season as the barred owl and the American crow, and its nest is ten times more difficult to locate than either.

As a food and game bird the woodcock is very popular, which accounts for its rapid disappearance in the vicinity of New York.

Mr. William T. Davis captured a woodcock near Egbertville on the fourth of July, 1885, with an insect net. The bird apparently supposed itself unobserved, and sat still, as is the habit of the species, but in this instance it staid too long. The bird appeared to be in good health and flew away vigorously enough when released.

Perhaps the most singular habit which this bird has, and the one with which I wish particularly to deal, is the feat of soaring high in the air and then returning again to nearly the same place, apparently without any reason for doing so. In searching for information on this

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question, I found that very little was said in regard to the details of this aërial performance. Wilson has recorded that the bird in rising from the ground forms a spiral and is occasionally heard to quack. This, however, does not give us a definite idea of what the bird really does, and it may be readily imagined that I recorded details almost to excess, when the opportunity recently presented itself to witness for myself this most interesting performance.

The following notes, taken in the vicinity of Princes Bay, are from my field book of this year.

March 22.—Up to date it had not been my privilege to witness the spring habit of the woodcock of rising into the air towards evening. Tonight, however, great pleasure was afforded me when I heard and saw several of these birds. Their regular note is a loose rattling buzz, which is uttered while they are on the ground. While I was standing on a low piece of ground overgrown with a second growth, my attention was attracted by one of these sounds. I approached to within 15 or 20 feet of the sound, when up flew the woodcock with a whistling of wings that could have been heard for some distance away. Up and up it went after leaving the earth, at a gradual slant of about 30 degrees, forming a spiral course that went from left to right. The whistling of the wings was continued After mounting in this manner to the hight of about 150 feet, it began, in addition to the wing sound, to utter a liquid, guttural note, which was slow at first but which seemed to reach a climax as the end of the upward spiral and the hight of 200 or more feet were reached. In starting for the ground the bird stopped all of the whistling of wings and changed the other sound into a squeaking, guttural note, quite different from the first. It then simply closed its wings and made very steep, swooping dashes, which formed a reverse spiral. While dashing toward the ground in this manner it seemed to divide its squeaking and whistling notes into measures with each swoop. The bird which I first saw regained the ground after making eleven distinct drops from a hight of some 200 feet. When it was two or three dives from the earth all sounds were stopped, and the bird fluttered softly through the second growth of plants to the ground. It almost immediately resumed its buzzing. Each buzz continued for about a second of time and was separated from the next by from 3 to 5, 25, or 30 seconds. By standing quietly I had not long to wait before I discovered that the birds would start up of their own accord and did not have to be approached, as I had first thought. At any time there could have been heard three or four woodcocks in the air, at different

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stages of their spirals, while others could be heard buzzing on the ground. In no case was I able to discover a female near the spot from which a male had just flown, although, in one instance, while I remained very still, a male buzzed, flew into the air, returned to the same place and started buzzing again. This it repeated several times until I interrupted it, whereupon it came down some 50 yards away. While standing in another part of the swamp, I heard a bird in the descending stage of its performance almost directly over my head. Looking up, I sighted it, and strange to say, it seemed not to see me but lit 20 or 30 feet away and started to buzz. In another instance I fired a 25 calibre rifle at one when it was half way up, but neither the sound nor the ball showed any effect upon it, for it proceeded as before.

March 26.—I heard several woodcocks buzzing at half past six p. m. and tried the experiment with the rifle again. This time no birds were in the air when I fired, and the sound had the effect of quieting every buzz in the neighborhood. For 20 minutes I waited, and none started up again. Later, I heard two at eight o'clock p. m.

March 27.—Again I listened to the woodcock. One flew so close to me that I could see its long bill. It carried the bill with the tip pointing toward the ground almost at right angles with the body.

April 11.—At half past six p. m., I made my way toward the woodcock district, and could hear the birds when several hundred feet away. Watching one bird in particular, I decided to count the number of noises made by it each each time before flying into the air. I noticed that it returned to almost the same spot after going into the air; so, when it left the ground the next time, I ran to the place where I thought it would be likely to alight, and lay on the ground. Down it came and fluttered to the earth not fifteen feet away, beginning almost at once to buzz.

Some days before, Mr. James Chapin had told me that he was of the opinion that the woodcock makes an additional sound just preceding each buzz, and I found that this is quite so. It resembles very much a hiccough, and indicates, I think, that it is an effort for the bird to make this buzzing noise, for sometimes the hiccough is to be heard with no buzz following.

The bird to which I listened buzzed 16 times and then flew off. Returning, it increased the number to 23; the next was 33; then 45; then it came back and buzzed only 25; and the last time that I counted it buzzed 80 times before leaving the ground, and took three and one-half minutes to do it in. I might add that I counted 7 hiccoughs that

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were not followed by any other sound while the bird was buzzing these 80 times.

Another interesting fact which appeared to be evident is that the bird did not seem to stand in the same place or position while buzzing. Some sounds were indistinct, and it was plain that the woodcock kept turning first in one direction and then another.

April 24.—At twenty-five minutes past seven p. m., I heard one woodcock only, and it continued its song for but a short time, and then I heard no more. It seemed that the season of song for the woodcock was waning, even as is the case with other birds when the breeding time comes on.

April 27.—At five minutes to seven p. m., I heard one bird buzz a few times, and then all was still, save for the woodfrogs and pickerings in adjoining ponds, and up to date (May 8) I have not heard another woodcock.

NOTES AND COMMENT.

Mr. Alanson Skinner exhibited specimens of moccasins made by the Seneca, Cayuga, Mohawk, Ojibway, Cree, and Sioux Indians, and discussed their several peculiarities of shape, embroidery, etc.

Mr. James Chapin exhibited skins of a young and an adult little green heron, *Ardea virescens* Linn., together with a nest, obtained from the vicinity of Green Ridge.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. "Hybridization of Wild Plants." D. T. Mac Dougal. *Bot. Gaz.*, vol. xliii, Jan. 1907, pp. 11-44, figs. 1-4.

This contribution is not only one of general interest on the subject of hybridization among wild plants, but it is of special interest to us by reason of the discussion in connection with Bartram's oak (*Quercus heterophylla* Michx.), and the fact that the critical observations on this admitted hybrid, described and illustrated in this contribution, were based upon young seedlings raised in the New York Botanical Garden, from acorns collected at Richmond Valley, Staten Island, in October 1905.

The tree from which the acorns were obtained was one of the several first discovered by Mr. Wm. T. Davis, in 1888, and recorded in the *Proceedings of the Natural Science Association of Staten Island*, vol. i, p. 71, Sept. 8, 1888, many years before the subject of hybridization

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had begun to receive the critical attention that has recently been given to it.

At that time the question of the hybrid origin of *Q. heterophylla* was yet open to discussion, but Mr. Davis and Dr. Arthur Hollick both declared their conviction that it must be a hybrid with the willow oak, *Q. Phellos* L., as one of the parents. The identity of the other parent remained in doubt for some time, but Dr. Hollick finally concluded that it was the red oak, *Q. rubra* L. (*Bull. Torrey Bot. Club*, vol. xv, Dec. 1888, pp. 308, 309), and in this connection the following discussion and conclusion by Dr. Mac Dougal, on pp. 50, 51, are both interesting and gratifying:

"About 75 acorns * * * were placed in the propagating houses of the New York Botanical Garden, with the result that 55 plantlets were available for study in December and January following. With the formation of the earliest leaves it became evident that a wide diversity of form of these organs and other qualities prevailed, as shown by the photograph taken in April [fig. 2].

"In May 1906 all of the plantlets were transferred to the experimental grounds, and as the development proceeded the diversity became still more marked. At the close of the season it could be seen that this group of plants included some which simulated *Q. Phellos* with its lanceolate entire leaves, while others were not separable from *Q. rubra*, the remainder being capable of arrangement in a series between these two poles. An examination of the literature disclosed the fact that the combined observations of the several botanists who have written on the subject refer to plants bearing almost the entire range of leaves noted in the cultures here described. In most of these accounts the leaves are said to be much like those of *Q. Phellos*, while some observations include notices of others which were broad lobed and notched, although most of these writers were extremely chary of identifying any of the forms with those of *Q. rubra*. It is to be noted, however, that as a result of the consideration of gross anatomical facts and distributional data, Dr. Hollick and other botanists had finally concurred in the general conclusion that the tree was in all probability a hybrid between the red oak and the willow oak.

"With our present available information concerning the behavior of hybrids this conclusion seems unavoidable * * * some of the individuals include so many of the qualities of the red oak and willow oak that the evidence is overwhelmingly in favor of the conclusion that the origin of *Q. heterophylla* is to be attributed to the hybridization of these two forms." A. H.

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II. In *Year Book* No. 5 of the Carnegie Institution of Washington, for 1906 [Washington, D. C., 1907], on p. 131, in the Report of the Department of Botanical Research by D. T. Mac Dougal, may be found a brief reference to the experiments in connection with the seedlings of *Q. heterophylla* noted in the preceding review and the conclusion there mentioned. A. H.

The meeting then adjourned.

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ANNUAL MEETING,

MAY 18TH, 1907.

The second annual meeting of the Association was held at the Staten Island Academy, New Brighton.

President Howard R. Bayne in the chair.

Twenty-three members were present.

The minutes of the meeting of April 20th, 1907, were read and approved.

The following reports were read, accepted, and ordered placed on file:

ANNUAL REPORT OF THE BOARD OF TRUSTEES.

The Board held five meetings, as follows: the annual meeting on May 26, 1906; stated meetings on October 6, 1906, January 5, 1907, and April 6, 1907, and a special meeting on November 22, 1906.

At the annual meeting officers of the Association were elected in conformity with Article II of the Constitution, and one vacancy in the Board, caused by the declination of Mr. Adolph Charles Knothe, was filled by the selection of Mr. John De Morgan.

One honorary member, Mr. Ira Konover Morris, and one corresponding member, Dr. Leland Ossian Howard, were elected.

The rules and regulations of the Board were amended in certain particulars, in order to meet contingencies that had not been originally foreseen.

Amendments to the By-Laws, which a year's experience showed to be necessary, were discussed by the Board, formulated, submitted to the Association, and adopted.

Negotiations with the municipal authorities, in connection with the housing, furnishing and maintenance of the museum and library of the Association, were continued. Formal permission was obtained from the Commissioners of the Sinking Fund and the President of the Borough to occupy the room in the Borough Hall assigned for the use of the Association. Plans for the museum cases and other furnishings have been prepared by the city architects and estimates obtained for the cost of construction. The matter of instalation and future maintenance is yet under advisement, as will be explained by the President in his annual address.

The several standing committees provided for under the rules and regulations of the Board transacted such business as came within the

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scope of their respective duties, as may be learned from their reports appended.

The routine business of the Association was transacted by the officers, under the occasional advice or direction of the Board, and their reports will also be submitted to you this evening.

Respectfully submitted for the Board,

ARTHUR HOLLICK, Secretary.

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee held four meetings, as follows: July 17, 1906, December 1, 1906, March 9, 1907, and May 10, 1907.

All items of business referred to the committee by the Board, were acted on, and the following legislation was formulated and approved by the Board:

I.

Program for the celebration and commemoration of the twenty-fifth anniversary of the organization of the Natural Science Association of Staten Island.

(Printed in the *Proceedings*, October 20, 1906, and also included in the special Memorial Number of the *Proceedings*, issued March 15, 1907).

II.

Amendments to the Rules and Regulations of the Board.

Voted: that in order to provide for an order of business at the annual meetings of the Board the following amendment be made to the Rules and Regulations, under "II.—Order of Business:" At the annual meetings of the Board the first order of business shall be the election of officers.

Voted: that the following additions be made to the Rules and Regulations under "III.—Standing Committees:"

Museum and Library Committee: The museum and library committee shall consist of five active members of the Association. The committee shall have general charge of the museum and library. They shall determine the system of arrangement of the specimens and books and the methods of labeling and cataloging the same, and they shall formulate such rules as they may deem advisable for the care and use of them.

Accessions Committee: The accessions committee shall consist of three members of the Association. They shall endeavor to secure accessions of historical and scientific material for the library and museum, by inviting donations, by making exchanges of duplicate books and specimens, and by recommending to the Board of Trustees the purchase of any desirable material; and they shall inquire into the

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value and authenticity of all such material and determine its availability.

[Extract from the minutes of the Executive Committee, July 17, 1906, and of the Board of Trustees, Oct. 6, 1906.]

III.

Amendments to the By-Laws:

Amendments to By-Laws IV and V were adopted by the Association November 19, 1906, and may be found printed in the *Proceedings*, vol. i, p. 84.

Amendments to By-Law III were adopted by the Association April 20, 1907, and may be found printed in full in the *Proceedings*, vol, i, p. 108.

IV.

Selection of delegates to represent the Association at scientific conventions:

Voted: that Mr. Charles W. Leng, Mr. William T. Davis, and Mr. Thomas Craig be selected as the delegates to represent the Association at the Seventh International Zoological Congress, to be held in Boston, August 19-23, 1907.

[Extract from the minutes of the Executive Committee, March 9, 1907.]

Voted: that Dr. Arthur Hollick be appointed the delegate to represent the Association in connection with the celebration by the New York Academy of Sciences, on May 23, 1907, of the 200th anniversary of the birth of Linnaeus, and that he be authorized to prepare the official document appreciative of the work of Linnaeus, as requested by the Academy in its letter of invitation.

[Extract from the minutes of the Executive Committee, May 11, 1907.]

HOWARD R. BAYNE, chairman.
J. BLAKE HILLYER.
WILLIAM H. MITCHILL.
CHARLES A. INGALLS.
ARTHUR HOLLICK, secretary.

REPORT OF THE AUDITING COMMITTEE.

The auditing committee held two meetings, one on May 26, 1906, at which the Treasurer's annual report was examined and found correct, and again on March 9, 1907, at which all of the Treasurer's books, accounts, and vouchers were subjected to careful examination and found correct to date, and a certificate to that effect was transmitted to the United States Guarantee Company.

GEORGE S. HUMPHREY, chairman.
CHARLES A. INGALLS, secretary.

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REPORT OF THE PUBLICATION COMMITTEE.

The publication committee has not held any formal meetings during the year.

The following publications have been prepared and issued:

Proceedings, vol. i, part ii (January to May 1906, inclusive), pp. 21-70, pl. i and illust. in text. Issued July 9, 1906. Edition, 400 copies.

Id., part iii (October to December 1906, inclusive), pp. 71-92, pl. ii. Issued April 17, 1907. Edition, 400 copies.

Id., Special Memorial Number, commemorating the celebration of the twenty-fifth anniversary of the organization of the Natural Science Association of Staten Island. Pamph., 8vo, pp. i-xl. Issued March 15, 1907. Edition, 1000 copies.

PHILIP DOWELL, chairman.
WILLIAM T. DAVIS.
ARTHUR HOLLICK, secretary.

ANNUAL REPORT OF THE TREASURER.

Debit and Credit Account.

Dr.

Balance on hand at date of last annual report	$627.60
Since received:	
Membership dues	408.00
Subscriptions to 25th anniversary dinner	177.50
Interest on deposits	11.15
Subscription to *Proceedings*	1.50
	$1,225.75

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Printing *Proceedings*	$252.50
Administration:	
Officers' accounts	77.83
Committees' accounts:	
25th anniversary dinner	259.45
Publication	22.21
Lecture	18.97
Accessions	14.50
Miscellaneous:	
Donation to Staten Island Academy	25.00
Premium on treasurer's bond	7.50
Subscriptions to periodicals	6.00

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Janitor	5.00
Exchange on check	.10
	$689.06
Balance on hand, May 18, 1907	536.69
	$1,225.75

J. BLAKE HILLYER, Treasurer.

ANNUAL REPORT OF THE RECORDING SECRETARY.

Number of members on roll at date of last annual report, including 2 honorary and 2 life members	129
Since elected, including 1 corresponding member	27
Deceased	5
Resigned	4
Declined election	1
On roll of membership at date, including 1 corresponding member, 2 honorary members, and 2 life members	146

ARTHUR HOLLICK, Recording Secretary.

ANNUAL REPORT OF THE CORRESPONDING SECRETARY.

Most of the correspondence received and answered has been in connection with inquiries concerning the publications of the Association.

The Association has one corresponding member, elected this year, Dr. Leland Ossian Howard of Washington, D. C.

PHILIP DOWELL, Corresponding Secretary.

ANNUAL REPORT OF THE HONORARY CURATOR.

Museum.

Three separate contributions to the museum collections have been made by three of our members, Dr. Arthur Hollick, Mr. John Rader, and Mr. Ira K. Morris, which include 15 specimens in geology and 1 in local history.

One loan collection of Staten Island minerals has been deposited with the Association by Mr. Theodore E. Smith of Watchogue Road, which consists of specimens from the limonite iron ore mines along Jewett Avenue near Richmond Turnpike.

One collection of North American violets, containing 150 sheets, has been added by purchase from Professor H. D. House of Clemson College, S. C.; and 14 sheets of violets from the vicinity of New York City have been presented by Professor House to the Association.

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Several other valuable collections have been definitely promised as donations, provided the Association will arrange for their proper display and safe keeping. Under existing conditions, however, it has been impossible to accept these. The proper care of our collections has long since outgrown the voluntary labor of our members, and the employment of a competent curator, who should give his entire time to labeling, classifying, and arranging the material now in our possession, is imperatively needed. The necessity for larger quarters and more display cases scarcely requires comment, but these will be adequately provided if we be enabled to occupy the room assigned for our use in the Borough Hall and succeed in obtaining the cases already planned.

Library.

The growth of the library has continued to a most gratifying extent, although no effort has been made in this connection and but little has been done except to note and acknowledge the accessions, as follows:

By subscription:

American Naturalist, current numbers.

Psyche, current numbers.

By donation:

Science, current numbers. Dr. Arthur Hollick.

Plant World, current numbers. " " "

Reprints of papers by Dr. Arthur Hollick. " " "

Bulletin American Mosquito Extermination Soc. " " "

Bulletin American Geographical Society, current numbers. Mr. Osborn M. Curtis.

Old Bible, dated 1807. Mr. Ira K. Morris.

Photographs of Staten Island Scenery. Mr. Herman Stutzer.

Photographs of Staten Island houses and scenery. Mr. George S. Humphrey.

By exchange:

Academy of Natural Sciences of Philadelphia, Philadelphia, Pa. *Proceedings.*

Academy of Science of St. Louis, St. Louis, Mo. *Transactions.*

American Academy of Arts and Sciences, Boston, Mass. *Proceedings.*

Augustana College and Theological Seminary, Rock Island, Ill. *Library Publications.*

Boston Society of Natural History, Boston, Mass. *Proceedings.*

Brooklyn Institute of Arts and Sciences, Brooklyn, New York City. *Science Bulletin*, *Cold Spring Harbor Monographs.*

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Bronx Society of Arts and Sciences, New York City. *Transactions.*

Cincinnati Society of Natural History, Cincinnati, O. *Journal.*

Colorado College, Colorado Springs, Colo. *Studies (Science Series, Social Science Series, Language Series, General Series).*

Colorado Scientific Society, Denver, Colo. *Proceedings.*

Columbia University, Geological Department, New York City. *Contributions.*

Connecticut State Geological and Natural History Survey, Hartford, Conn. *Bulletin, Reports.*

Davenport Academy of Sciences, Davenport, Iowa. *Proceedings.*

Elisha Mitchell Scientific Society, Chapel Hill, N. C. *Journal.*

Entomological Society of Ontario, London, Ont. *Canadian Entomologist, Annual Reports.*

Field Columbian Museum, Chicago, Ill. *Publications.*

Geological Institute of the University of Upsala, Upsala, Sweden. *Bulletin.*

Geological Survey of Canada, Ottawa, Canada. *Reports.*

Geological Survey of Ohio, Columbus, O. *Reports, Bulletin.*

Historical and Scientific Society of Manitoba, Winnipeg, Canada. *Annual Report, Transactions.*

Instituto Geologico de Mexico, Mexico City, Mex. *Parergones, Bulletin.*

Kaiserliche Leopoldinisch-Carolinische Deutsche Academie der Naturforscher, Halle, Germany. *Abhandlungen, Leopoldina.*

Kansas Academy of Sciences, Topeka, Kan. *Transactions.*

Linnaean Society of New York, New York City, N. Y. *Abstract of Proceedings.*

Lloyd Library, Cincinnati, O. *Bulletin, Mycological Notes.*

McGill University, Montreal, Que. *Department Classics (Applied Science, Botany, Chemistry, Engineering, Geology, Mineralogy, Ophthalmology, Pathology, Philosophy, Physics, Physiology, Zoology).*

Missouri Botanical Garden, St. Louis, Mo. *Annual Report.*

Museo Nacional de Costa Rica, San José, Costa Rica. *Paginas Illustradas.*

Museo Nacional de Montevideo, Montevideo, Uruguay. *Anales.*

Natural History Society of Glasgow, Glasgow, Scotland. *Transactions.*

Natural History Society of New Brunswick, St. John, N. B. *Bulletin.*

New York Academy of Sciences, New York City, N. Y. *Annals.*

New York Botanical Garden, Bronx Park, New York City, N. Y. *Bulletin.*

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Nova Scotian Institute of Science, Halifax, N. S. *Proceedings, Transactions.*

Oberhessische Gesellschaft für Natur-und Heilkunde zu Giessen, Giessen, Germany. *Bericht.*

Ohio State Archaeological and Historical Society, Columbus, O. *Quarterly.*

Ottawa Field Naturalists' Club, Ottawa, Ont. *Ottawa Naturalist.*

Public Museum of the City of Milwaukee, Milwaukee, Wisc. *Annual Report.*

Rochester Academy of Science, Rochester, N. Y. *Proceedings.*

Roger Williams Park Museum, Providence, R. I. *Bulletin, The Apteryx.*

Sapporo Natural History Society, Sapporo, Japan. *Transactions.*

Smithsonian Institution and U. S. National Museum, Washington, D. C. *Annual Report, Bulletin U. S. National Museum, Proceedings U. S. National Museum, Contributions U. S. National Herbarium, Special Bulletin, Papers by Charles Janet.*

Sociedade Scientifica de Sao Paulo, Sao Paulo, Brazil. *Report, Revista.*

Societas Entomologica Bohemiae, Prague, Austria. *Acta.*

Societas pro Fauna et Flora Fennica, Helsingfors, Finnland. *Acta, Meddelanden.*

St. Louis Public Library, St. Louis, Mo. *Annual Report.*

Torrey Botanical Club, New York City, N. Y. *Bulletin.*

Tufts College, Tufts College, Mass. *Studies.*

University Museum, Michigan Academy of Science, Ann Arbor, Mich. *Reports, Bulletin, Reprints.*

University of Kansas, Lawrence, Kan. *Science Bulletin.*

University of Montana, Missoula, Mont. *Bulletin.*

University of the State of New York, Albany, N. Y. *Bulletin, State Museum Report.*

University of Vermont, Experiment Station, Burlington, Vt. *Annual Report, Bulletin.*

U. S. Department of Agriculture, Washington, D. C. Bureau of Plant Industry. *Bulletin.*

U. S. Geological Survey, Washington, D. C. *Annual Report, Professional Papers, Monographs, Bulletin, Water Supply and Irrigation Bulletin, Mineral Resources.*

Vassar Bros. Institute, Poughkeepsie, N. Y. *Reprint, Convention of 1788.*

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Wilson Ornithological Club, Oberlin, Ohio. *Wilson Bulletin.*
Wisconsin Academy of Sciences, Arts and Letters, Milwaukee, Wisc. *Bulletin, Transactions.*

The committee on nominations for trustees reported the following nominees:

Daniel Delehanty,
John De Morgan,
Stafford Clarence Edwards,
Samuel Alexander Henszey,
William Armour Johnston.

The report of the committee was received and the Association proceeded to ballot.

Twenty-three ballots were cast, resulting in the election of the nominees suggested by the committee, and the President declared them to be elected trustees of the Association for the ensuing three years.

The following were elected to active membership:
Louis A. Dreyfus, New Brighton.
Cornelius G. Kolff, Stapleton.
George W. Nock, West New Brighton.
James G. Timolat, New Brighton.

Dr. Arthur Hollick, delegate appointed to represent the Association at the celebration by the New York Academy of Sciences, on May 23, of the 200th anniversary of the birth of Linnaeus, read the following document to be presented by him on that occasion:

To the New York Academy of Sciences: GREETING.

It has been said by Taine that "every book and every man may be reviewed in five pages and those five pages in five lines." On this occasion, however, we are not asked to review the life or the books of the man in whose honor we are assembled, but to testify, as briefly as may be, to our appreciation of his work and what this work has meant to his posterity. Such a task is different from that which the reviewer is ordinarily called upon to perform, and to do it justice in words, within a reviewer's recognized limitations, would be impossible in connection with the name of Linnaeus. Fortunately, however, words are not necessary, and indeed are superfluous, where this appreciation is so clearly demonstrated in the fact that we accept the principles which

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he formulated and pursue the methods which were his in all of our scientific activities. By merely recognizing and calling attention to this fact we show our respect for the man and what he has wrought far better than by even the most earnest and sincere attempt to express our sentiments in words.

Consciously or unconsciously the influence of Linnaeus is felt by all modern scientific workers. System, or rather the ability to systematize, is the key to progress in all lines of human endeavor, and science in particular owes its present commanding position to those who have recognized and applied the principles of Linnaeus in their work and who have accepted and applied his rules for the nomenclature of natural objects.

Linnaeus was preeminently a systematist, and it was this habit of mind, more than anything else, that raised him above his contemporaries in science. Without his masterly ability to coordinate and arrange his work in logical sequence and coherent groupings his great powers of observation would have lacked completeness. This ability was the special characteristic which enabled him to revolutionize the scientific work of his age and to influence so profoundly all that has followed.

To Linnaeus may well be applied the words of Bourget: "In life everything is unique and nothing happens more than once."

Submitted on behalf of
The Staten Island Association of Arts and Sciences.
Arthur Hollick, delegate.
200th anniversary of the birth of Linnaeus,
May 23rd, 1907.

The President then delivered his annual address as follows:

ANNUAL ADDRESS OF THE PRESIDENT.

It is doubtless my duty in the annual address required by the By-Laws to apprise you of the progress of the Association during the past year as well as of its condition and prospects.

The year just closed has witnessed an increasing interest and zeal on the part of our members and a growing influence in the community. Without special efforts our membership has been increased by the election of twenty-seven new members, and the number on our roll at the present time, 146, is larger than ever before in the history of the Association.

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I sincerely regret to note the death of five of our members:

Oliver Durfee Clark.
George Meredith Whitehouse.
Augustus Acker.
Richard Fair.
Louis Balmat Baker.

For personal reasons, such as removal from the Borough, etc., four have resigned, and one gentleman elected has been unable to avail himself of the honor, owing to inability to attend the meetings.

The trustees have elected as corresponding member Mr. Leland Ossian Howard, B. S., Ph. D., of Washington, D. C., Chief of the Division of Entomology in the U. S. Department of Agriculture, and Permanent Secretary of the American Association for the Advancement of Science. Mr. Howard is the first to receive this honor.

The meetings of the Association during the past year have been well attended. At the meeting of February 16th, 1907, at the residence of the President, the number attending was greater than ever before in the history of the Association. All of the meetings have been characterized by pleasant social intercourse as well as by discriminating valuable scientific discussions.

For specimens and papers and interesting exhibitions during the year we are specially indebted to Dr. Philip Dowell, Mr. Alanson Skinner, Mr. Ira K. Morris, Dr. Arthur Hollick, Mr. James Chapin, Mr. William T. Davis, Mr. John Rader, Mr. Stafford C. Edwards, Mr. William Allaire Shortt, Mr. Howard H. Cleaves, Mr. L. A. Camacho, Mr. Osborn M. Curtis, Mr. George S. Humphrey, and Mr. H. B. Brownell.

The Association has been hospitably entertained at the homes of Mr. William H. Mitchill, Mr. William Allaire Shortt, and Mr. Justice Lester W. Clark. Your President has also been honored by its presence at his residence. The social features of these entertainments have been most delightful, and the Association is greatly indebted to the gentlemen who have so hospitably entertained our members.

The most notable social gathering of the Association was on November 12th, 1906, when a banquet was held in celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island. This banquet occurred at the Hotel Castleton. Thirty-nine members and twenty-five guests, ladies and gentlemen, attended the dinner. The event was unusual in the social history of the Island and was marked by charming sociability and good fellow-

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ship on all sides. A memorial account of this banquet has been published by the Association and further reference is therefore here unnecessary.

From the reports of the Treasurer, you will observe that the finances of the Association are in satisfactory shape, and that our income and surplus are increasing. All obligations have been met promptly upon maturity, and the credit of the Association has never been better.

The annual prize of $10 for work in natural science, open to pupils in the Curtis High School, has aroused considerable interest in that institution, and a number of competitors for the prize are at work. This is a valuable aid to the educational interests of the Borough, and I sincerely hope that the Association will be able to enlarge its usefulness in this particular field.

The assistance of the Association has been requested by the Hon. George Cromwell, President of the Borough, in selecting dates of important events in the history of the County to be inscribed upon the tablets erected in the Borough Hall. A committee, consisting of Mr. Ira K. Morris, chairman, Mr. William T. Davis, and Dr. Arthur Hollick, was appointed for this purpose. The committee carefully prepared a list of such dates extending from the earliest settlement of the County to the foundation of the Borough Hall and submitted the same to the Borough President. We are not apprised as yet of his final action in the matter.

The current business of the Association has been carefully transacted by the Board of Trustees and the Executive Committee, with the assistance of the officers of the Association, and I need not weary you by the details thereof as they are included in the annual reports previously submitted.

The scientific work of the members has been varied, conscientious, valuable, and interesting.

The publications of the Association have been issued in an improved form and in larger compass. In addition to the regular issues, a special memorial number commemorating the twenty-fifth anniversary of the organization of the Natural Science Association of Staten Island was issued March 15th, 1907. These publications continue to be sought by scientific bodies, institutions, and libraries throughout this country and abroad. The exchange list is constantly increasing and our progress in this respect, while devoid of unnatural stimulation, is entirely satisfactory. Additions to our library by exchange and donation have been larger than ever before. Our collection of scientific

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specimens and objects of historical interest is constantly growing. Donations of books, specimens, and objects of great value are withheld because we have no place to put them and make use of them. What we actually receive, we have to store in the room generously provided by the Staten Island Academy or entrust to kindly disposed members for safe keeping.

On April 12th, 1907, Hon. James S. Whipple, Forest, Fish and Game Commissioner of the State of New York, upon the invitation and under the auspices of the Association, delivered a public lecture at the Curtis High School upon the preservation and development of the State Forests. Though the night was stormy there was a large attendance, and the lecture was received with evident interest and enjoyment. It should become a part of the settled policy of the Association to invite to our Borough scientists and others distinguished in the various walks of life, who may contribute by public addresses to the accomplishment of our purposes and to the intellectual enjoyment and development of our members and fellow citizens.

Aiming to carry out the purposes of the Association, the Board of Trustees have endeavored during the past year to secure the recognition and aid of the municipal authorities in the effort to instal the museum and library for the benefit of the public. Under this impulse an application was made on behalf of the Association to the Commissioners of the Sinking Fund to set aside the large room on the third floor of the Borough Hall for the purpose of publicly exhibiting the collection of specimens of the Association and devoting it and the scientific library to the use of the public and particularly of the teachers and pupils of the public schools.

On the 14th day of November, 1906, the Sinking Fund Commissioners unanimously passed a resolution as follows:

"*Resolved*, that pursuant to the provisions of section 7 of chapter 526 of the Laws of 1905, the President of the Borough of Richmond be and is hereby authorized to provide Room No. 309 on the third floor of the Borough Hall, in the Borough of Richmond, for the use of the Staten Island Association of Arts and Sciences, for the occupying and maintaining of the Museum Collection and Library of said Association; said permission and assignment to continue during the pleasure of the Commissioners of the Sinking Fund."

Application was then made on behalf of the Association to the Board of Estimate and Apportionment for an appropriation of $3500, covering the cost of instalation and salaries of a curator and an assistant. It was supposed that the Borough President had sufficient funds

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in his hands to furnish the room without a special appropriation. After a lapse of some time it appeared that this impression was not well founded and a second application was made to the Board of Estimate and Apportionment for an appropriation of $4180 to cover the expense of providing show cases and otherwise furnishing the room to receive the collection of the Association. After a number of conferences with the Comptroller of the City of New York, it developed that the Board would hardly grant these applications together, and so on behalf of the Association it was proposed that if the City would supply the furniture for the room, including the cases and the expense of instalation amounting to $4180, together with heat, light, and janitor's service, the Association would provide the expense of caring for the collection and library. This proposition was pronounced by the Comptroller to be entirely acceptable to him and would receive his cordial endorsement before the Board. I, thereupon, invoked the special cooperation of the Borough President in the matter and received from him a promise to endeavor to bring the matter to a successful termination at the earliest practicable day.

I had hoped to be able to report to you at this meeting the favorable action of the Board of Estimate and Apportionment in the premises, but owing to the illness of the official charged with the duty of preparing the Comptroller's report to the Board of Estimate and Apportionment, the matter has not yet reached that body for its final action.

If the municipal authorities provide for the Association quarters well furnished to receive our collection and library, upon condition that we supply curatorial service for opening and maintaining a public museum, we must see to it that the condition is promptly accepted and faithfully complied with. This involves the raising of adequate funds, which may be accomplished by increasing our membership or raising the annual dues or by appeals to public spirited citizens for subscriptions, or by combining two or all of these methods. The results will determine not so much the question whether we will have a museum, for I regard that as certain, but whether we will at an early day have a museum of which we shall be proud.

We need not expect too much at the start, and we certainly should not undertake too much. We should begin conservatively, but resolutely. We should lay the foundation well and build up well. I do not urge you to be over-zealous, but calmly persistent in accomplishing what we have set our hand to. And I urge you to do this because it is right and helpful to the community, in which we live and to which

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we owe an unselfish devotion of the best results of such culture and training as we have. We must not be discouraged by the lack of sympathy in public officials. None of us have graduated in the school that teaches the full measure of civic learning, public spirit, public progress, and the public's knowledge of what the public ought to provide for itself. If we become imbued with the love of this learning, we shall long to hand the lighted torch to our fellows, and in time it will surely reach our brothers in office.

I make no doubt that when our museum is once opened to the public under municipal patronage, we then lay the foundation for an institution that is bound to grow to large proportions. Accretions to our collection and library, numerous, acceptable, and valuable, are already in sight. And we shall need it to enlarge our publications, to include illustrations, memoirs, and much other matter that economy compels us now to omit; to provide public lectures by distinguished scientists, to encourage original research and investigation, to increase our library and to enlarge our museum.

Bearing all these things in mind, let us begin the new year with a steadfast and an indomitable resolution to attain, finally and well, our purposes.

Mr. Howard H. Cleaves exhibited photographs of hailstones and read the following paper:

A REMARKABLE HAILSTORM.

About the middle of the afternoon of June 23, 1906, it commenced to hail. The stones were of the usual size, and I thought I was doing well when I accumulated a tumblerful, the largest of which was the size of a small marble. Some minutes passed and no more stones fell, and those that lay on the ground had almost melted. My sister and I were standing on the lawn, when suddenly a white ball hit the turf not a great distance off and bounced two or three feet into the air. We looked over into the next yard, thinking that the youngsters had thrown and egg at us. This idea was quickly dispelled when with a gradual increase the white objects began to batter on the roof and on the lawn in rapid succession. The uproar in the house caused by the stones falling on the roof was very great. It was hard to make anyone hear what was said, even though but a few feet away.

Stones were now falling very thickly and rebounding from the ground three or four feet, some making indentations in the lawn and garden one

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and one-half or two inches deep. All foliage on grapevines and on many shrubs and trees was greatly injured; and in some cases almost ruined. Twigs a quarter of an inch in diameter were snapped, and fruit of several kinds was knocked from the trees. Young peaches, apples, and pears were split squarely in two, exposing the green and half developed seeds within. Pieces of thick slate from the roof were strewn about on the grass beneath.

About six hundred panes of glass in the S. S. White Dental Company's building were broken, and the glaziers were kept busy for days afterward. A train of the Staten Island Rapid Transit Railroad, which passed through Princes Bay, had a good many of the north windows broken.

One of the stones that my mother and I measured showed a circumference of eight and one-quarter inches. The weight was between three and four ounces on our mail scales, and the stone was weighed after it had melted considerably.

Messrs. Frank Schultz and Sterling Wincapaw, who were in Tottenville at the time of the storm, and who beat a hasty retreat to an old shed on the beach for shelter, both testified that anyone not having been near the water when the stones were falling had missed a memorable sight. They said that several of the ice balls passed completely through the somewhat rotted roof of the shed. They also stated that each stone on hitting the surface of the water caused a great splash, sending the water several feet into the air.

Without much exertion two of us picked up about fifty pounds of ice and deposited it in the ice chest. When the "ice man" came later in the afternoon, we told him we did not care for any ice that day, for we had gathered ours on the lawn.

Photographs, shown on Plate III, were taken by Mr. Schultz, which verify to a great degree the above statements as to size, etc. Figure 1 shows six hailstones that completely filled one of Mr. Wincapaw's hands; figure 2 is a flashlight picture, showing them heaped up in an ice chest; and figure 3 shows Mr. Schultz's ice cream freezer full of hailstones. The family made ice cream later in the afternoon using the hailstones in the place of ordinary ice.

The stones resembled monstrous lozenges in shape, some being frilled or corrugated on the outer edge. Almost every one started in the center with a small ball of white snowy ice; then came a ring of transparent ice with tiny bubbles distributed through it, and so on to the cicrumference there were the alternating rings of clear and opaque ice.

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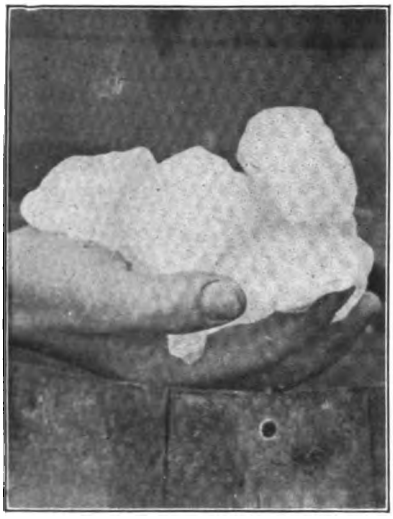

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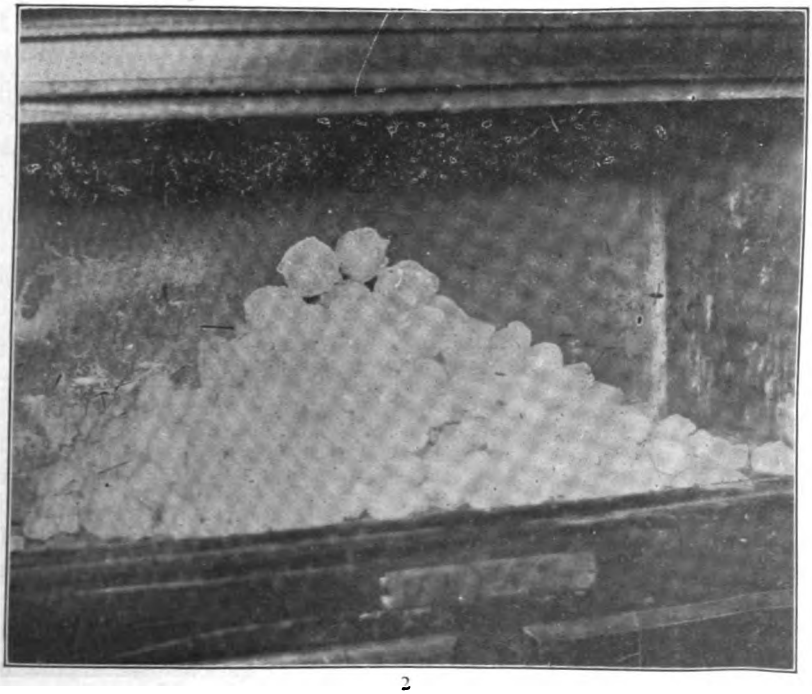

2

Photographs of hailstones at Princes Bay, June 23, 1906 (p. 134).

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This storm occurred on the same day and at about the same time that the waterspouts formed in the Lower Bay, which were described by Mr. L. A. Camacho at our meeting on March 16 (see *Proceedings*, vol. i, p. 100).

Mr. William T. Davis exhibited specimens of tree crickets and read the following paper:

A NEW SPECIES OF TREE CRICKET.

On the 4th of last August, while on Long Neck, I collected three tree crickets that had different marks on the first and second joints of the antennae than the other species known to me, and so were of considerable interest. At the end of the season I found that I had in all ten individuals of this species from various adjacent parts of New Jersey as well as from Staten Island. The characters are so distinct that it was decided to name the species, and it was accordingly called *Œcanthus exclamationis*. The description appeared in the *Canadian Entomologist*, vol. xxxix, May, 1907, p. 173, figs. 7, 8.

A list of the tree crickets now known to occur on Staten Island is as follows:

Œcanthus bipunctatus De Geer
" *latipennis* Riley
" *niveus* De Geer
" *angustipennis* Fitch
" *exclamationis* Davis
" *quadripunctatus* Beut.
" *fasciatus* Fitch

NOTES AND COMMENT.

Mr. Davis exhibited specimens of *Bufo americanus* Le Conte and *B. fowleri* Putnam. He stated that the common toad of Staten Island is the latter species, as determined by the descriptions contained in the recently published "Frog Book" by Mary C. Dickerson.

Mr. J. Blake Hillyer, on behalf of Mrs. George W. Curtis, presented an old map of Staten Island, published by M. Dripps, 34 Vesey St., New York, in 1872.

Mr. Alanson Skinner exhibited and described a collection of dried foodstuffs used by the New York State Indians, including corn, black-

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berries, elderberries, beans of several kinds, squash, "Indian tobacco," boiled bread made of green corn mixed with beans, etc. Also a pack strap made of Indian hemp.

RECENT LITERATURE RELATING TO STATEN ISLAND.

"*New Species of Gall-producing Cecidomyiidae.*"—William Beutenmuller. *Bul. Am. Mus. Nat. Hist.*, vol. xxiii, 1907, pp. 385-400, pls. 13-17.

Thirty-one species of the gall-producing flies are noticed in this paper, and twenty of them are described as new. The galls produced by all but two of the thirty-one species are figured, and reference is made to other literature in which cuts of these two may be found. The paper is of particular local interest for the reason that most of the galls described may be found in the vicinity of New York City and five of the new species are mentioned as occurring on Staten Island.

W. T. D.

The meeting then adjourned.

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These Proceedings are sent free to all active, life, honorary, and corresponding members, and to patrons. To others the subscription price is 50 cts. per part, or $2.00 per volume.

PUBLICATIONS OF THE ASSOCIATION.

It is planned to issue the Proceedings in parts, according as material for publication is available, and to make four parts constitute a volume. Vol. 1, parts i-iv, pp. 1-136, pls. 1-3, June 1905-May 1907, with title page and index, has been issued. They are the continuation of the Proceedings of the Natural Science Association of Staten Island, which were published consecutively from November 10th, 1883, to June 3d, 1905, and were included in nine volumes, separately indexed, as follows:

Volume I, pp. 74, Nov. 10th, 1883—Oct. 13th, 1888.
" II, " 87, Nov 10th, 1888—Oct. 10th, 1891.
" III, " 67, Nov. 14th, 1891—Oct. 14th, 1893.
" IV, " 86, Nov. 11th, 1893—Oct. 12th, 1895.
" V, " 97, Nov. 9th, 1895—Oct. 10th, 1896.
" VI, " 64, Nov. 14th, 1896—Oct. 8th, 1898.
" VII, " 79, Nov. 12th, 1898—Oct. 13th, 1900.
"VIII, " 92, Dec. 8th, 1900—Oct. 10th, 1903.
" IX, " 51, Nov. 14th, 1903—June 3d, 1905.

Any of the above listed volumes may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a price of 50 cts. each will be charged:

Special No. 21, Vol. v, No. 5, Mch. 14th, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. vii, No. 15, Mch. 10th, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jun'r. Pamph., pp. 33, pls. i-iv.

Special No. 23. Vol. viii, No. 25, Oct. 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

The Act of Incorporation, Constitution, and By-Laws, List of Members, etc., (Pamph., pp. i-xxv. 1906) and the special Memorial Number of the Proceedings, issued in commemoration of the celebration of the 25th Anniversary of the organization of the Natural Science Association of Staten Island (Pamph., pp. i-xxxvii. 1907), will be sent free on application.

The right is reserved to withdraw any numbers from sale at any time.

Subscriptions, and inquiries concerning the publications, should be addressed to

DR. PHILIP DOWELL,
CORRESPONDING SECRETARY,
Staten Island Association of Arts and Sciences,
Port Richmond, N. Y.

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late Natural Science Association of Staten Island]

MEMORIAL NUMBER

COMMEMORATING THE CELEBRATION

OF THE

TWENTY-FIFTH ANNIVERSARY

of the organization of the

Natural Science Association of Staten Island

New Brighton, Borough of Richmond, City of New York

[Issued March 15, 1907]

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OFFICERS

OF THE

NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

1881—1882.

President—Sanderson Smith.

Recording and Financial Secretary—Charles William Leng.

Corresponding Secretary—Arthur Hollick.

Curator—William Thompson Davis.

OFFICERS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

1906—1907.

President—Howard Randolph Bayne.

First Vice-President—William Thompson Davis.

Second Vice-President—William Hinman Mitchill.

Recording Secretary—Arthur Hollick.

Corresponding Secretary—Philip Dowell.

Treasurer—John Blake Hillyer.

Honorary Curator—Charles Arthur Ingalls.

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

[Late Natural Science Association of Staten Island]

MEMORIAL NUMBER

CELEBRATION

OF THE

TWENTY-FIFTH ANNIVERSARY

of the organization, on Saturday, November 12th, 1881,

of the

Natural Science Association of Staten Island

HOTEL CASTLETON

New Brighton, Borough of Richmond, City of New York,

Monday, November 12th, 1906.

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PROCEEDINGS

in connection with the 25th Anniversary of the organization of the

Natural Science Association of Staten Island

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INTRODUCTION

Resolution adopted by the Association, May 19, 1906

"Mr. J.Blake Hillyer referred to the fact that the 12th of next November would be the 25th anniversary of the organization of the Natural Science Association of Staten Island and suggested that the event should be recognized in some manner suitable to the occasion.

Resolved, that the Board of Trustees be requested to consider and to formulate a program to celebrate and commemorate the twenty-fifth anniversary of the organization, on November 12th, 1881, of the Natural Science Association of Staten Island".

[Abstract from the minutes of the annual meeting of the Association, held on Saturday, May 10, 1906]

Report of the Executive Committee

"Items of business referred to the Committee by the Board of Trustees were presented by the Secretary and acted upon as follows:

* * * *

Voted: that the following program be suggested for the celebration and commemoration of the 25th anniversary of the organization, on November 12th, 1881, of the Natural Science Association of Staten Island:

1st—A subscription dinner on November 12th, 1906, to celebrate the completion of twenty-five years of organized scientific work on Staten Island, to which all members of the Staten Island Association of Arts and Sciences shall be invited to subscribe, and to which a limited number of guests of the Association shall be invited to attend.

2nd—The inauguration of a new, additional, series of publications, to be designated "Memoirs of the Staten Island Association of Arts and Sciences," designed to give, in time, as complete a presentation as possible of the geology, botany, zoology, archeology and antiquities of Staten Island in a uniform style,—each number of the series to deal with one subject only, and to be a complete monograph in itself,—the title of the series to be followed by the legend "Established 1906, to commemorate the organization, on November 12th, 1881, of the Natural Science Association of Staten Island," or some legend to the above effect."

[Abstract from the minutes of the meeting of the Executive Committee, held on Tuesday, July 17th, 1906]

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Action of the Board of Trustees

"The report of the Executive Committee was submitted in the form of the minutes of the meeting held by the Committee on July 17th, 1906.

Voted: that the report of the Executive Committee on the proposed celebration and commemoration of the 25th anniversary of the organization of the Natural Science Association of Staten Island be received, and approved in regard to its general plan and scope; and that the President be requested to appoint the chairman of a committee of arrangements, who together with the President shall select such additional members as they may deem advisable to constitute the committee, whose duty it shall be to arrange all details for the proposed dinner, on November 12th, in general accordance with the suggestions submitted by the Executive Committee.

* * * *

Voted: that the suggestions of the Executive Committee in relation to the establishment of a new, additional series of publications be referred to the Publication Committee for consideration and report."

[Abstract from the minutes of the stated meeting of the Board of Trustees, held on Saturday, October 6th, 1906]

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ANNOUNCEMENT BY THE COMMITTEE OF ARRANGEMENTS

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

(Late Natural Science Association of Staten Island.)

ANNOUNCEMENT.

At the annual meeting of the Association, held on May 19th, 1906, the following resolution was adopted:

Resolved, that the Board of Trustees be directed to consider and to formulate a program to celebrate and commemorate the 25th anniversary of the organization, on November 12th, 1881, of the Natural Science Association of Staten Island.

In accordance with the above resolution the Board appointed a special committee on the subject, and this committee has arranged for a *subscription dinner, at the Hotel Castleton, on Monday evening, November 12th*, to which all members of the Association are hereby invited and urged to attend.

The subscription is $2.50, and guests' tickets may be obtained at the same price.

Members are requested to bring as guests any friends who may be interested in the occasion, and they are specially requested to invite as guests any lady members of their families.

A number of distinguished persons, prominent as public officials, and in the arts and sciences, have been invited to be present and to deliver appropriate addresses.

This will be a unique event for Staten Island, celebrating and commemorating as it will the successful completion of a quarter of a century of organized scientific work in the community, and it is hoped that all will unite in making it a success.

If you intend to be present kindly fill in and return the enclosed slip in the accompanying stamped and addressed envelope, not later than November 5th, making check payable to J. Blake Hillyer, Treas.

ARTHUR HOLLICK, *Chairman*,
HOWARD R. BAYNE,
DANIEL DELEHANTY,
WILLIAM H. MITCHILL,
DARWIN L. BARDWELL,
J. BLAKE HILLYER,
Committee.

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INVITED GUESTS

HON. GEORGE B. MCCLELLAN,
Mayor of the City of New York.

HON. HERMAN A. METZ,
Comptroller of the City of New York.

HON. PATRICK F. MC. GOWAN,
President of the Board of Aldermen.

HON. GEORGE CROMWELL,
President of the Borough of Richmond.

HON. JOHN F. AHEARN,
President of the Borough of Manhattan.

HON. LOUIS F. HAFFEN,
President of the Borough of the Bronx.

HON. BIRD S. COLER,
President of the Borough of Brooklyn.

HON. JOSEPH BERMEL,
President of the Borough of Queens.

DR. JOHN S. BILLINGS,
Director of the New York Public Library.

MR. WILLIAM T. HORNADAY,
Director of the New York Zoological Park.

DR. NATHANIEL L. BRITTON,
Director of the New York Botanical Garden.

SIR CASPAR PURDON CLARKE,
Director of the Metropolitan Museum of Art.

DR. HERMON C. BUMPUS,
Director of the American Museum of Natural History.

MR. FRANKLIN W. HOOPER,
Director of the Brooklyn Institute of Arts and Sciences.

MR. SANDERSON SMITH,
The first President of the Natural Science Association of Staten Island, 1881—1882.

MR. WALTER C. KERR,
President of the Natural Science Association of Staten Island 1892—1899.

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MEMBERS AND GUESTS PRESENT

Rev. Arthur H. Allen
Howard R. Bayne
Mrs. Howard R. Bayne
Nils Bergquist
Willard A. Boyd
Mrs. Willard A. Boyd
Thomas A. Braniff
Dr. Nathaniel L. Britton
Mrs. Nathaniel L. Britton
Orrin L. Brodie
Mrs. Orrin L. Brodie
Mrs. Agnes Brodie
Dr. Hermon C. Bumpus
Rev. Charles S. Burch
James Chapin
William T. Davis
Capt. Daniel Delehanty
Mrs. Daniel Delehanty
Miss Delehanty
Miss Bertha Delehanty
John DeMorgan
Lewis H. Denton
Mrs. Lewis H. Denton
Timothy F. Donovan
Stafford C. Edwards
Mrs. Stafford C. Edwards
Thomas A. Fulton
Mrs. Thomas A. Fulton
Oliver P. Geoffroy
John F. Gould
Mrs. John F. Gould
Samuel A. Henszey
J. Blake Hillyer
Dr. Arthur Hollick
Mrs. Arthur Hollick
Miss Grace Hollick
Charles Humphrey
Mrs. Charles Humphrey
George S. Humphrey
Mrs. George S. Humphrey
William F. Hunt
Charles A. Ingalls
Mrs. Charles A. Ingalls
Algernon K. Johnston
Frederick A. Johnston
William A. Johnston
Thomas F. Kane
Watson F. Keeney
Walter C. Kerr
Winfield R. Koller
James P. Lough
William Mac Donald
Mrs. William Mac Donald
John Martin
Mrs. John Martin
Hon. Herman A. Metz
William H. Mitchill
Mrs. William H. Mitchill
John Rader
Alanson Skinner
Frederick W. Skinner
Harry F. Towle
Louis L. Tribus
Mrs. Louis L. Tribus

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LETTERS AND TELEGRAMS

CITY OF NEW YORK,
OFFICE OF THE MAYOR.

October 22d, 1906.

Mr. Howard R. Bayne,
67 Wall Street, City.

Dear Sir:—The Mayor directs me to acknowledge your letter of October 17, inviting him to attend the twenty-fifth anniversary dinner of the Staten Island Association of Arts and Sciences, at the Hotel Castleton, on the evening of Monday, November 12, and to express his regret that owing to the demands on his time, it will be impossible to accept.

His Honor further instructs me to thank you for your thoughtfulness.

Respectfully,
William A. Willis, Executive Secretary.

DEPARTMENT OF FINANCE,
City of New York.
Herman A. Metz, Comptroller.

October 18, 1906.

Mr. Howard R. Bayne,
President, Staten Island Association
of Arts and Sciences.

Dear Sir:—I beg to acknowledge receipt of your invitation on behalf of the Staten Island Association of Arts and Sciences, to attend its 25th anniversary dinner on the evening of November 12th, and to say that if it be possible for me to do so I shall be very glad to be present. Thanking you for this courtesy, I am,

Yours very truly,
H. A. Metz.

The City of New York
Office of the
PRESIDENT OF THE BOARD OF ALDERMEN
City Hall

October 29, 1906.

Dr. Arthur Hollick,
Chairman Committee of Arrangements,
New Brighton, New York.

Dear Sir:—Please accept my thanks for your courteous invitation to attend the dinner of the Staten Island Association of Arts and Sciences,

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to be given on the evening of the 12th instant in commemoration of the 25th anniversary of its organization, and I assure you it would afford me great pleasure to accept the same, but—as I have written to Superintendent Bardwell that I had already made an engagement for that evening which it will probably be impossible for me to forego—I regret very much that I am unable to accept your courteous invitation.

Very truly yours,
P. F. McGowan.

OFFICE OF THE

PRESIDENT OF THE BOROUGH OF RICHMOND

November 8, 1906.

Dr. Arthur Hollick,
New Brighton, N. Y.

My dear Doctor Hollick:—I beg that you will pardon me for not having responded earlier to the very kind invitation of the Staten Island Association of Arts and Sciences to be present and to speak at the dinner on Monday night next in celebration of the 25th anniversary of the founding of the original society. My excuse for not having replied before is that during the last two weeks I have been exceedingly busy and have had time to attend to only the most urgent official business.

It is with very sincere regret that I find myself unable to accept the kind invitation of the Association because of an engagement made many weeks ago from which I cannot get released, although I endeavored to do so yesterday in order that I might attend your dinner. I am very sorry about it because, as you know, I take a very great interest in the Association and have great hopes for its large expansion and usefulness.

With very sincere regret that I cannot be with you on Monday night, but with best wishes for the great success of the dinner, I remain,

Yours very sincerely,
George Cromwell.

City of New York
Office of
THE PRESIDENT OF THE BOROUGH OF MANHATTAN
City Hall

Oct. 29th, 1906.

Arthur Hollick, Esq.,
Staten Island Association of Arts and Sciences,
New Brighton, Staten Island, N. Y.

Dear Sir:—I have your kind invitation to be present at the dinner at

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the Hotel Castleton, on the evening of November 12th, and beg you to accept my best thanks for your courtesy and remembrance. I shall make every effort to attend at that time.

Yours very truly,
John F. Ahearn.

The City of New York.
Office of the
PRESIDENT OF THE BOROUGH OF THE BRONX,
Municipal Building, Crotona Park.
Louis F. Haffen, President.

New York, Oct. 29th, 1906.

Dr. Arthur Hollick,
Chairman, Committee of Arrangements,
Hotel Castleton, St. George, S. I., City.

Dear Sir:—I beg to acknowledge receipt of your invitation to be one of the guests at the dinner of the Staten Island Association of Arts and Sciences, to be held at Hotel Castleton, St. George, Staten Island, on the evening of the 12th day of November next, at 7 o'clock, for which please accept my thanks.

I regret very much my inability to be present, but it is absolutely impossible for me to reach Staten Island on said night after attending to other engagements I have for said evening.

Yours truly,
Louis F. Haffen.

[TELEGRAM]

Brooklyn, N. Y., November 12, 1906.

Dr. Arthur Hollick, Chairman,
Committee of Arrangements, etc.
Hotel Castleton, St. George, Staten Island, N. Y.

I regret very much that it will be impossible for me to attend your dinner tonight. Comptroller Metz informs me that he is going and my sorrow is lightened by the knowledge that you will have in him the biggest and best part of the City government.

Bird S. Coler.

---

40 LAFAYETTE PLACE, NEW YORK.

October 30, 1906.

Arthur Hollick, Chairman, Committee of Arrangements,
Staten Island Association of Arts and Sciences,
New Brighton, S. I.

Dear Sir:—I have the honor to acknowledge the receipt of your invitation to be one of the guests at the dinner of the Staten Island

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Association of Arts and Sciences on the evening of November twelfth, for which I beg to return thanks. I regret that in consequence of a previous engagement, it will be impossible for me to have the pleasure of being present.

Very sincerely yours,
J. S. Billings.

THE ZOOLOGICAL PARK
New York

November 5, 1906.

Dr. Arthur Hollick, New Brighton, N. Y.

Dear Dr. Hollick:—I have delayed replying to your kind invitation to the anniversary dinner of the Staten Island Natural Science Association in the hope that I might find it possible to accept. But I am reluctantly compelled to admit that I am yet physically unfit to go out nights and enjoy evening occasions.

By careful attention I can manage to get through my day's work, but by the time night comes I am physically and mentally exhausted and good for nothing. I have not spent an evening out since last April.

Under the circumstances I can only thank you most gratefully for your very kind and much appreciated invitation, and assure you that were I physically able I would joyously accept. It would give me great pleasure to participate in such an anniversary.

Wishing the Association long life and great prosperity, I remain

Sincerely yours,
W. T. Hornaday.

NEW YORK BOTANICAL GARDEN,
BRONX PARK,
NEW YORK CITY.

November 2nd, 1906.

Dr. Arthur Hollick.,
New Brighton, N. Y.

Dear Sir:—Replying to your letter of October 25th, I accept with pleasure the invitation of the Staten Island Association of Arts and Sciences to be present at the dinner to be held on the evening of November 12th. I will speak on the subject that you suggest.

Yours truly,
N. L. Britton.

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METROPOLITAN MUSEUM OF ART,
CENTRAL PARK,
FIFTH AVENUE AND EIGHTY-SECOND STREET,
OFFICE OF THE DIRECTOR,
NEW YORK.

October 30th, 1906.

Mr. Arthur Hollick,
Chairman, Committee on Arrangements,
Staten Island Association of Arts and Sciences.

Dear Sir:—I have the pleasure to acknowledge the receipt of your letter of the 25th instant inviting me to be one of the guests on the evening of the 12th of November.

I regret, however, that a previous engagement for that evening will prevent me from accepting your kind invitation, for which I thank your committee. I beg to remain,

Yours very faithfully,
C. Purdon Clarke.

AMERICAN MUSEUM OF NATURAL HISTORY,
NEW YORK.

November 1, 1906.

My Dear Dr. Hollick:—Many thanks for yours of October 25, in which you so courteously invite me to be one of the guests at the dinner of the Staten Island Association of Arts and Sciences, to be held at the Hotel Castleton, St. George, Staten Island, on the evening of November 12, at 7 o'clock. It will give me pleasure to be present and to meet you at that time.

Very cordially yours,
H. C. Bumpus.

Dr. Arthur Hollick, New Brighton,
Boro' of Richmond, New York.

THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES,
Founded, 1824. Re-Incorporated, 1890.
Director, Prof. Franklin W. Hooper, M. A.
OFFICE: 502 FULTON STREET,
BROOKLYN.

October 29th, 1906.

Dr. Arthur Hollick, New Brighton,
Borough of Richmond, New York City.

My Dear Dr. Hollick:—I am in receipt of your letter of October 25th containing the invitation of the Staten Island Association of Arts

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and Sciences to be its guest at dinner at St. George, Staten Island, on the evening of the 12th of November, in commemoration of the Twenty-fifth Anniversary of the organization of the Natural Science Association of Staten Island.

I have been interested in this Association partly through yourself, and partly through friends, for several years, and I assure you that it gives me very great pleasure to accept the invitation.

I will try to say something, in response to your request, on the subject proposed in your letter.

Very sincerely yours,
Franklin W. Hooper.

THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES,
Founded, 1824. Re-Incorporated, 1860.
Director, Prof. Franklin W. Hooper, M. A.
OFFICE: 502 FULTON STREET,
BROOKLYN.

November 8, 1906.

Dr. Arthur Hollick, New Brighton,
Borough of Richmond; New York City.

My Dear Dr. Hollick:—I very much regret that it is going to be impossible for me to attend the dinner on Monday evening, November 12th, as I had definitely arranged to do. I regret exceedingly that I cannot be a member of your gathering on that evening to congratulate those who are present upon the work already accomplished in the interest of an institute of arts and sciences in the County of Richmond, and also to speak a word of appreciation of the plans of the Association.

Owing to the decease of a member of my family, I am compelled to cancel my engagement.

Very sincerely yours,
Franklin W. Hooper.

New York, N. Y., Oct. 29, 1906.

Dr. Arthur Hollick;
New Brighton, N. Y.

My Dear Dr. Hollick:—I have your favor of the 25th instant and will take pleasure in doing anything I can for the Association of Arts and Sciences, and will therefore be glad to say what I can on the occasion of the dinner on November 12th.

Anticipating pleasure in meeting you and the other members at that time, I am, with due appreciation of your request,

Truly yours,
Walter C. Kerr.

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ADDRESSES

ADDRESS OF WELCOME

HOWARD R. BAYNE
President of the Staten Island Association of Arts and Sciences.

LADIES AND GENTLEMEN:

It is my pleasant duty to extend to you all a most cordial greeting and welcome, and on behalf of the Association, specially to assure the ladies and gentlemen, our guests, of the gratification and honor we feel at their presence around this board.

We are here this evening to celebrate the 25th anniversary of the organization of the Natural Science Association of Staten Island. A quarter of a century closes tonight since 14 gentlemen met at the home of Mr. William T. Davis, at Tompkinsville, and formed the society which we now represent. A number of the organizers are still with us and constitute the most helpful and valuable material we have.

Many changes have occurred in our community during this long period. Our population has nearly doubled. The physical appearance of the Island has in some parts completely changed. Many, once well known and prominent among us, have been removed by death or the vicissitudes of fortune which characterize more than anything else our American life today. We have emerged from the simple village and country life with which we were altogether familiar into something with which we were unfamiliar. We have passed into the civic and social complications of the metropolis of the western hemisphere, with all its great opportunities, its high aspirations, and its world-wide sympathies. And if we have been slow to take our place in the march of progress and to claim for our community its share in the distribution of public opportunities, it has been due, not, I think, to lack of a sense of the need of improvement and advance but rather to the lack of coöperation in laying the foundation broadly and well for the intellectual and moral as well as the material welfare of our borough.

The Association we here represent tonight stands for this discreet and public spirited coöperation.

To it the community owes a debt that can never be paid, except by recognition and acknowledgement and encouragement in the years to come. Its work, quietly, unobtrusively, effectively prosecuted for a quarter of a century, has been a labor of love, which the muse of His-

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ment as time may require, worthy of the noble purposes to which it is devoted, and in keeping with the ideals of this great City. We may well be proud of the public institutions of Greater New York, but we should not be so content with them as to feel that nothing may be done to extend their beneficent influences to our own borough. We are entitled to appropriations for something else than the making of highways and sewers, the removal of garbage, and the establishment of handsome quarters for the imposition and collection of taxes. However essential to our welfare all such departments may be, they are not the only things we need.

No community that contents itself with facilities for mere material existence can make much progress toward a high degree of civilized life. Such facilities are enjoyed in their greatest perfection when the highest culture and best ideals obtain. Indeed they are the effect, not the cause, of civic cultivation and the best public spirit.

Let us adopt an intelligent principle of action on this subject, and then let us proclaim it and live up to it. And, in due time, we shall create a public opinion, which no official, however high, can disregard, and no difficulties, however obdurate, can withstand.

Reaching these aims, we may well begin to think that life is worth living in the Borough of Richmond and that to some appreciable extent our Association has contributed to results so admirable, so really helpful, and so well worth all the efforts we may give for them.

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THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

WALTER C. KERR

Ex-President of the Natural Science Association of Staten Island, 1892-99.

LADIES AND GENTLEMEN:

The most important historical fact connected with this association is that it exists and that it is really alive. There is a fine distinction between "existing" and "living." We know that mummies exist, and we have heard of associations organized for various purposes which still retain their form and being, but so far as any one knows they contain no red blood.

The next most important historical fact is that it is better, more prosperous, and more firmly rooted than it has been at any time during the quarter century that it has lived.

Many associations have histories that taper the wrong way. They start with the enthusiasm of the few, extend to the mediocrity of the many, and then decline to the lethargy of the uninterested and uninteresting.

This association represents no lost arts. It has been a perpetuator of constant interest in the things for which it stands. It has always had a small coterie of loyal men, who through its minor ups and downs have been the embodiment of its real strength and existence in a way that cannot but excite the admiration of any one versed in what makes and unmakes such organizations.

When we remember that this little body has held together for twenty-five years today without a fixed home, with but little concrete or physical token of existence, with motives that could scarcely inspire appreciation by the people of things of which they were mostly ignorant, and amid the tremendous pressure of a busy world clamoring for attention to everything under the sun,—it is somewhat remarkable that it should have grown, prospered, and come to its quarti-centennial anniversary in the condition in which the Association appears tonight. The reason is that the real Natural Science Association existed not on paper, nor in a building, nor in any appeal for help, approval or aggrandizement, but it existed primarily in the desire, minds, and motives

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of a few men who loved nature, and then in a somewhat greater number who looked with a friendly interest upon such endeavor.

During the year 1881 the desirability of such an association was discussed by several young men who occasionally tramped the Island together. A notebook was put in circulation in which any one who favored this idea was invited to write his name.

When about twenty names had been secured, a call for a meeting was issued, signed by Nathaniel L. Britton, Arthur Hollick, and William T. Davis, to be held at the residence of Mr. Davis, on Saturday evening, November 12, 1881—twenty-five years ago tonight.

This is the piece of paper on which this call was written by Dr. Britton while crossing the bay on one of the ferryboats, which paper Mr. Davis took to the printer as copy for the notice that was issued. This paper, therefore, more than any other token, stands for the organization of this association. It is the original document.

[The paper was here handed out and passed around for inspection.]

Fourteen responded to this call and organized the Natural Science Association of Staten Island, choosing Mr. Sanderson Smith as the first president.

During the next few months meetings were held at the rooms of the Young Men's Catholic Union and in Public School No. 3, New Brighton. In 1882 the Board of Trustees of the Village of New Brighton offered the free use of a large room in the village hall as a meeting place and museum, which was thus occupied for some fourteen years.

In 1896 the Staten Island Academy generously tendered the Association the use of its facilities, and a room was set aside to which the library and museum were tranferred. Meetings were then held, sometimes at the Academy, but more often at the residence of various members, as had become the custom since 1892.

During the first four or five years the membership gradually increased, and the meetings were well attended. The interest then somewhat waned until, in 1892, the membership reached the low water mark of thirty-six and the attendance at meetings was very meagre.

About that time it was my pleasure, as a new resident, to learn of the existence of the Association, and I shortly became a member. The first meeting that I attended is well impressed upon my memory. It was on May 14, 1892, the only other member present being the secretary, Arthur Hollick.

Various conditions, which of themselves were of little importance, had operated to cause all or many of the meetings to be poorly attended. In some respects it was perhaps a fortunate accident that at my

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first meeting the attendance was so small as to create what might have been to some an adverse influence, whereas under all the circumstances the result was quite the opposite. It was my pleasure to shortly learn the real quality of the Association and with others to perceive its opportunity. Several of us put our heads together to enable the best influences at our command to bring forth the most good. That started, as it were, a new era but no new motive. As president for the succeeding seven years, I followed the affairs of the Association closely, and when the pressure of my many cares required that some be dropped, the active administration was continued by Lester W. Clark and then by Howard R. Bayne, with the result that the membership advanced from 36 in 1892 to 129 in 1906.

Although such an institution deals little with finance, it is admittedly prudent for it to be conveniently solvent. During these twenty-five years, with a limited membership and with dues of only $3 per annum, this association has published its *Proceedings* monthly without having missed an issue; it has published several pamphlets of considerable size, which have been freely distributed to members and sold to others; it has bound its books, bought cases for its collections, and provided itself with all facilities really needed, and has shown each year a balance which, starting from $28 in 1883, has grown at an almost uniform rate to $624 in October, 1906, and, as it never has owed anything, this is about the most continuous record of solvency that I have ever known.

The first number of the *Proceedings* was issued in November, 1883. This publication soon began to attract attention in scientific circles, thus bringing requests for exchange of publications, and by gradual extensions these exchanges came to be made with societies in various parts of the world. Scientific and historical societies, public museums and libraries, and other institutions were eager to exchange their extensive works, often beautiful volumes, for our meagre leaflets dealing with one small locality, thus building up for us a library which has to a considerable extent taxed the resources of the Association for care and maintenance. The number of titles on our exchange list is now about eighty, and this number could be doubled at once if provision could be made to take care of the books thus secured in exchange.

If there is any one thing which characterizes the quality of the men and minds that have made this little institution what it is, it is the demand that has existed for its meagre and often poorly printed pages, sometimes only one page a month and seldom more than four, by these important societies, who were willing to give in exchange the large and often handsomely illustrated volumes previously mentioned. Fortun-

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ately, true men of science do not measure by volume, weight, pages, nor attractiveness of appearance, but by the real matter contained.

This little association, however humble its publications, has continually contributed new matter, new facts, new finds, and truly scientific descriptions. The *Proceedings* have not been replete with the paraphrasing of old knowledge. It has not been mere compilation of things compiled before, and dry as such reading may be to some, the fact that it is genuine must be interesting to many.

Gradually there has been accumulated a museum of local fauna and flora, and it is believed to be as complete in its scope as may be found in any locality. Few sections have been so thoroughly explored by men well versed in various branches of science as Staten Island. The material collected has been named and classified, until the natural history and antiquities of the Island are splendidly represented.

In some respects it is an advantage to do such work within an insular locality. Its boundaries are defined. It may have been of great assistance to this association to have so small a territory in which to work. This has led to a thoroughness that might otherwise have been dissipated by attempting too much on broad areas. Some may think that thoroughness may have removed opportunity for future work, and that the rapid increase in settlement will so destroy all traces of primitive nature as to make the field of this association chiefly an oasis that once was. That the tendency is in this direction cannot be doubted, but it takes a long time to destroy nature, sad as it may be that so much is destroyed.

The so-called march of progress seems unnecessarily ruthless, but it is the way of civilized man to destroy everything first and then see what he can do to restore it in some artificial way. The same characteristic of mind that will change the name of Blazing Star to Linoleumville will cut down the forest and upon its ruins build a park with concrete walks.

However, we must take this little area, like the whole world, as we find it and move along with it. Some day this association will have no field in which to work, and then it will be a museum and a library, and its field activity will be a tradition. This time is so far ahead, however, that we can doubtless hold our fiftieth anniversary with the *Proceedings* still reporting finds on the north shore and the south, from the bottoms of the ponds and the tops of the trees—so we will not worry regarding a posterity that has not yet helped or hurt us much.

With the march of progress and the invasion of our repose by municipal affairs, it seems appropriate to make some changes in name and

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custom, even if not in the real character of the organization. It has therefore within the past year become the Staten Island Association of Arts and Sciences. This is only a change of name. We have known of other things very dear to us that changed their names, but we loved them none the less. There is no suggestion of anything effeminate in this mere change of name. This organization now begins to take on the complexion of the arts as well as the sciences, which seems to be a wholesome infection resulting from municipal contact. It will not lessen our powers and it may bring some desirable support. Our happiness by any other name would seem as complete, and so it is not of the name, nor of this minor change that we think when we meet tonight to realize that we are brought together by an instinct of twenty-five years in the search for knowledge of what nature and history brought to the locality in which it is our good fortune to live.

One does not like to single out the ones from the many in an association where all are equal and where rank and caste are unknown, but it would seem inappropriate to pass this milestone in our history without mentioning a few of the men who have so constantly and faithfully performed the real work with the real interest which made this association what it is.

First in the inception of the Association, ever constant in its support, and still active in its welfare, are Arthur Hollick, William T. Davis, and Nathaniel L. Britton, each of whom has made a mark in science deeper than our local interests can claim.

Dr. Britton is well known as one of the most active and advanced of botanists, standing in the front rank of his profession; who found everything on Staten Island that the rest of us have not since found, and regarding whom we have but one regret, which is that he has had to largely leave us for the broader field of the Botanical Garden of the Bronx; yet he keeps his picturesque, ever quaint, summer home by the sea at New Dorp.

Dr. Hollick has likewise wandered northward to the bowers of the Bronx by way of Columbia University, yet with no relinquishing of his activity in the Staten Island field. He has been a large contributor and the patient and ever faithful secretary of the Association, who has done what perhaps no one else could or would have done to preserve the integrity of our *Proceedings* under all circumstances for a quarter of a century, and whose scientific writings are too well known elsewhere to require special reference to his large contributions to our pages.

Then "Willie" Davis, whom every one knows as a naturalist—the born naturalist of Staten Island—than whom there never has been and

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probably never will be a better all-around observer, discoverer, or describer of things new, rare and interesting.

Among the several founders, there was especially Dr. Carroll, a man of scientific instinct and inspiration who, though not a field worker in the ordinary sense, helped furnish the spirit which founded this institution in the right way.

Then Charles W. Leng, with his beetles, thousands of them, so many that he does not know how many he has; an authority on many orders, a man to whom government officials refer, and to whom they will lend almost anything in the national collection.

Thomas Craig with his microscope, who has long since left us; Gratacap; with a wise eye for geology; Chapin with his birds; Dr. Dowell in botany; Morris and Delavan in local history; and Pepper and Skinner in archeologieal research; all have brought forth much, while a dozen others have contributed their quota to the active work which has made the Association more than a name. Each in his own way has done something and taken a pleasure in the doing. It is withal a modest effort, but in the aggregate it has given the Association not only a creditable place among its larger fellows, but it has frequently been referred to at various times and in many places as an ideal natural science association, whose methods were worthy of copy.

When I was president, I was several times asked how we held together and how we could keep up the work, especially with what others in their greater localities regarded as our limited opportunities. The answer then, as now, was that this association was the real thing. It was doing serious work of quality and cared not for quantity. Everything was done for the love of it, and men tramped fields and found and discussed things in a true scientific spirit; we were in pleasant social relationship and together played with what was really more than play. This is the right spirit. Cold stones and often living things are not interesting except as they appeal to something within us that becomes interesting. The contemplation of science is a personal attribute, which must lie within those who delve in it, and it is only when it comes out of them and centers about that with which they are in contact that it becomes a real moving thing which creates and perpetuates interest. It is this which gives warrant for the organization whose continuance and prosperity we celebrate tonight.

If time permitted, I would like to tell of many things we have found on this Island, but that leads to a story too long. It may, however, be of passing interest to remark that we have a most exceptional collection of drift fossils, which have a distinct bearing upon the know-

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ledge of glacial conditions, and which are now regarded as valuable and may in time become exceedingly valuable in geological records.

We have found new plants and insects that never before were found, not merely on Staten Island, but anywhere in the world. We have found some causes for various scientific phenomena, which are of interest and may be valuable; and we have preserved the flora and fauna of this locality in such a manner as will possess the greatest interest when the hand of civilization has done her work by sweeping from the face of this region all that nature intended it to hold.

Many have an impression that the making of such collections is merely a gratification of curiosity—a desire to collect and see things stand in cases. This is a very poor comprehension of what such collections stand for. Long years hence, centuries, perhaps tens of centuries, there will be races of which we have never heard, who will place a proper value upon the diligence and care which a few men gave to the proper preservation of the history of the rocks, the woods and the fields, and from these records, made in material and in print, deductions will be drawn that will be of the greatest value and most intense interest to those who are called upon to solve problems in which all these things are testimony, sometimes proof.

It is therefore with great pleasure that I speak for this Association of Arts and Sciences, evolved from the old Natural Science Association; to commend to your best consideration and support the perpetuation of this activity throughout the many years during which its opportunity can yet be effective.

When all of the field work shall have been done, it will remain only to preserve and guard the records. There is room for at least another twenty-five years of endeavor, and I take pride in delivering to those who follow, the keeping of the records, the motives, and the sentiment of the past.

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Local Scientific Societies: Their Influence and Value

Dr. Nathaniel L. Britton

Director of the New York Botanical Garden
Ex-President of the Natural Science Association of Staten Island, 1889-91

Ladies and Gentlemen:

Science has become predominant in human life. All the advances that have been made in civilization are directly or indirectly due to scientific investigation and discovery. Wireless telegraphy; the extraordinary properties of radium; the control of yellow fever and malaria by the demonstration of the fact that these diseases are transmitted from one person to another by certain species of mosquitoes, and the diminution of the number of mosquitoes by sanitary drainage and otherwise; the manufacture of aniline dyes from the waste products of the distillation of coal; the nitrogen-fixing power of certain bacteria and other lowly organized plants by means of which the soil is enriched in plant food; the recognition of the fact that many diseases of both plants and animals are caused by the growth of fungi, bacteria, and other organisms within their tissues or organs; and the conclusion that the plants and animals now living on the earth are all descended from extinct ancestors that lived in previous geological epochs; are a few of the noteworthy and familiar examples of such advances. A multitude of other results, more or less comprehensive, have also been reached and are of enormous importance to mankind. Additional facts of great value are being wrested from nature continually. Any new facts, even such as may seem trivial, may be important, and it is only to the progress of scientific research that we can look for a still higher civilization. This increase in knowledge is due almost entirely to the work of members of scientific societies.

The enormous number of facts and considerations that scientific investigation has brought to the attention of civilized man, has forced a division of knowledge, no one person being able to grasp the whole range of subjects except in a general or superficial manner. Specialization has thus become necessary, and students have been developed along many different lines of thought. This in its turn has required organization, in order that groups of students be formed who by mutual intercourse may consider the various phases of knowledge in their re-

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lation to each other. Societies are therefore necessary for efficient work.

Local scientific societies have long been recognized as important factors in public education, serving as permanent repositories of information for public use and as distributors of such information. The principal methods by means of which they accomplish these valuable functions may properly claim our attention.

1. Museums and Other Collections. Inasmuch as the work of local scientific societies relates mainly to natural objects, collections of such objects are indispensable for reference and for record. Portions of these collections are available for the direct information of the public by being placed on view, grouped so as to illustrate facts and theories, and properly labeled; such portions of the collections form the museum. The educational value of museums is coming to be more and more recognized all over the world, so much so indeed that special associations formed for the purpose of considering this feature alone now exist in England, on the continent of Europe, and in the United States. Museums supplement the work of schools, colleges, and universities, and are regarded by many students and teachers as equal in educational value to any one of these three. Other portions of the collections, consisting of specimens too small, too valuable, or too fragile for display, or that would be damaged by exposure to the light, must necessarily be preserved in closed cases, and only such persons as can use them to advantage are given access to them. These reference collections are often of greater scientific value than the museum.

2. Libraries. The books and pamphlets accumulated by local scientific societies are largely such as are unlikely to be found in many other libraries, being naturally selected with special reference to their immediate work. Such libraries come therefore to contain many documents not readily accessible elsewhere, inasmuch as they are largely derived from exchanges with other similar societies in various parts of the world, and in this way valuable information is made available to the community.

3. Publications. The facts observed and conclusions reached by members of societies are supplied to the public by published transactions, proceedings, or under other titles, and they form a very important part of our literature, there being a large number of such societies and many of them publish voluminously. The facts recorded in these publications are not by any means restricted to the immediate recipients of the documents, inasmuch as many of them are copied into journals or newspapers and are cited by other students in various other publications. The *Proceedings of the Natural Science Association of*

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Staten Island, which have now been published continuously over a period of about twenty-five years, have been cited and quoted in other works all over the world, and are on file in many of the large public libraries.

4. MEETINGS AND LECTURES. Meetings provide opportunity for the interchange of ideas among the members and their immediate friends, for the discussion of hypotheses and theories, and for the presentation of new facts and discoveries for record in the archives or in publications. Lectures directly reach the public in general and distribute information in an attractive manner, performing an important educational function for the community.

Some of these societies have existed for many years and their influence has been great, but most of them had small beginnings; some have obtained recognition and partial support from cities and towns, while the amount of money privately contributed for their work, in the form of membership dues, gifts and bequests, is collectively very large.

Local scientific societies are able to carry out comprehensive studies of natural phenomena over limited areas, thus accumulating valuable series of facts and observations which societies of broader scope find impossible. Accurate and complete information concerning the natural objects and features of small geographical areas is very important to local communities and often has wider interest or general scientific significance, and the records of natural phenomena that ultimately become obliterated by the building up of towns and villages are very desirable to preserve by descriptions, photographs, drawings or specimens. Our association has always given close attention to this work, and the natural history of Staten Island is perhaps as thoroughly and accurately known as that of any other equal area in the United States, although much yet remains to be done.

The existence of a local society in a community provides the possibility of obtaining data relative to natural objects by reason of some of its members being always available for observing facts that might otherwise be lost to science. In our experience there have been repeated instances of such incidents, one very recent one having already thrown a flood of light on certain features of the character of the vegetation which formed the forests about New York City during the Cretaceous period in geologic time.

The work of such societies supplies the very best training for young people in natural science, their interest being aroused and maintained as in no other way. Nature study is coming to be more and more recognized as an important factor in public education and has already

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been made a part of the curriculum of our public schools, where its influence on the children is known to be very good. A relationship between the nature study of the schools and the work of scientific societies and institutions is very desirable to foster and is capable of great development. The study and consideration of natural objects tends toward honesty of thought, purpose, and action, and toward exactness of observation and conclusion.

Local scientific societies are also valuable to the community as agents of general culture, and as an indication to the people that there are things beyond the ordinary affairs of life which may be profitably considered.

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The City and Its Public Museums: What the City Should Do for Staten Island

Hon. Herman A. Metz
Comptroller of the City of New York

Ladies and Gentlemen:

I am asked to speak to you of the museums of New York and their relations to the City and of the City's duty to them, and especially what the City should do for Staten Island in this connection; but as comptroller of the City I prefer to call your attention to what the City has already done for its museums and leave you to infer what it ought to do for Staten Island.

These museums have recently come to my notice in considering, as a member of the Board of Estimate, the budget for 1907, when they requested for maintenance for next year $840,100.99 as against $670,000 appropriated for the purpose for 1906. The names of these institutions, with the appropriations for their maintenance for 1906 and their requests for 1907, are as follows:

	Appropriated 1906	Requests 1907	Increase over 1906
Brooklyn Institute of Arts and Sciences	$ 80,000.00	$ 95,000.00	$ 15,000.00
American Museum of Natural History	175,000.00	205,650.00	30,650.00
Metropolitan Museum of Art	145,000.00	242,718.99	97,718.99
New York Zoological Park	145,000.00	154,572.00	9,572.00
New York Zoological Society for Aquarium	45,000.00	45,000.00	———
New York Botanical Garden	80,000.00	97,160.00	17,160.00
	$670,000.00	$840,100.99	$170,100.99

The interest on the corporate stock issued for the construction of buildings and other betterments in their behalf is between three hundred and fifty and four hundred thousand dollars annually, which added to maintenance appropriations of about $800,000 makes the goodly sum of about one million two hundred thousand dollars contributed by the tax-payers annually for this purpose.

It is proper to mention the other side of this matter, which is the

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contributions by the friends of the museums for their development, which will appear so far as the amount of money they receive from other sources than the city for the year 1905, and their expenditures therefrom, as shown by the following figures:

	Receipts 1905	Expenditures 1905
Brooklyn Institute of Arts and Sciences	$129,651.89	$98,595.45
American Museum of Natural History	94,650.00	90,019.23
Metropolitan Museum of Art . .	61,324.23	255,564.30
New York Zoological Park:		
Contributions . . .	27,965.30	
Rents and Privileges . .	14,816.36	
	42,781.66	40,962.23
New York Botanical Garden . .	34,325.15	33,164.32

And in addition they receive many valuable donations of works of art and other collections to which the public at reasonable times have access.

The arts and sciences in this region seem to have first found their home in Brooklyn, for as early as 1823 some good citizens of that town organized the Brooklyn Apprentices Library Association, which was afterwards changed in name to the Brooklyn Institute of Arts and Sciences, and on the 4th of July, 1825, General Lafayette laid the corner stone of its first building at the junction of Henry and Cranberry streets. In 1835 this institution had outgrown its original quarters, and the City of Brooklyn was prevailed upon to purchase its property and the Institute moved to a new building on Washington Street, then the residential center of the young City of Brooklyn. For fifty years thereafter this institution did noble work in Brooklyn and endeared itself to every lover of science, art, and literature, and during that entire time was sustained through the generosity of its individual patrons. In 1892 the city again took its building, which stood in the way of the Brooklyn Bridge, and leased to the Institute its present site near Prospect Park, expending $50,000 on the grounds and $335,500 for the building and equipment. In 1895–6 the legislature authorized the expenditure of $600,000 for the continuance of the work on the museum buildings and two years later authorized the expenditure of $10,000 for the care and maintenance of the museum for the year 1897, which Brooklyn appropriated accordingly.

In the old City of New York, now the Borough of Manhattan, for

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nearly half a century after Brooklyn started its museum, the arts and sciences would seem to have been confined to a few wealthy individuals who kept collections in their homes, for it was not until 1870, 47 years after Brooklyn started its collections, that the Museum of Natural History was incorporated.

While New York was slow in starting, it made up for lost time by proceeding to business forthwith, and in 1871 the legislature authorized the Commissioner of the Department of Parks to erect buildings for the Museums of Art and Natural History at an aggregate cost, the interest upon which should not exceed $35,000 for each of said buildings.

Money was six per cent. at the time, and although the plans were elaborate, the legislature and the city fathers no doubt thought that if these gentlemen expected to carry them out some lover of art must go down in his pockets to finish them, but the lovers of art at that time must have been as expert in finance as the most conspicuous of our art connoisseurs of today, for when they agreed to take the museum bonds for two per cent. the town was up against a stock issue of $3,500,000. And they did not stop at that. The legislature was many times invoked to help the good work at the expense of the City, so that up to date there has been expended for the building and equipment of the American Museum of Natural History, $4,462,429.86, and for like purposes for the Metropolitan Museum of Art, $4,559,628.29, or a total of $9,022,058.15. Of the stock issued for this purpose $958,000 has deen redeemed, and the balance of $8,064,058.15 is outstanding, on which the city is paying interest averaging 3%, in round figures $240,000 annually, or $120,000 annually for each institution.

The legislature of 1873 passed an act providing that out of the appropriation for the maintenance of parks in New York there should be appropriated for the maintenance of museums $50,000 annually. This was followed by various other acts increasing the annual appropriation from time to time, and appropriations were made accordingly up to the time of consolidation.

With consolidation came the consideration of the amount to be appropriated for all the museums, based on the custom existing in the several boroughs before consolidation, and the embodying in the charter of annual appropriations not exceeding $250,000 for all three of them, which has since been raised by the legislature to $400,000 for the Museums of Art and Natural History and $95,000 for the Brooklyn Institute of Arts and Sciences.

The following are the annual appropriations since consolidation, allowed in the budget of the Park Department by the Board of Estimate

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and Apportionment for the maintenance of these institutions:

	Museums of Natural History and Art	Brooklyn Inst. of Arts and Sciences
1898	$190,000.00	$20,000.00
1899	190,000.00	46,875.00
1900	215,000.00	46,875.00
1901	225,000.00	55,000.00
1902	285,000.00	60,000.00
1903	310,000.00	70,000.00
1904	310,000.00	70,000.00
1905	310,000.00	75,000.00
1906	320,000.00	80,000.00
1907	320,000.00	95,000.00
	$2,675,000.00	$618,750.00

or a total for maintenance of the three institutions since consolidation of $3,293,750.00

In the same category are the NewYork Zoological Park and the New York Botanical Garden in the Bronx and the Aquarium at the Battery.

The New York Zoological Park is maintained on an agreement between the New York Zoological Society and the City, which provides that the City shall furnish "adequate maintenance." By a similar agreement between the same parties, provision is made for appropriation annually of "not less than $45,000" for the maintenance of the Aquarium.

The New York Botanical Garden is maintained by the City, pursuant to an act of the Legislature and an agreement with the New York Botanical Society.

These two latter institutions have jurisdiction over part of Bronx Park, and since consolidation, in addition to $125,000 theretofore expended, the City has made the following contributions for improvements to them:

Botanical Garden	$1,118,135.74
Zoolological Park	1,212,857.21
The land cost of Bronx Park was .	1,585,459.64
	$3,916,452.59
Adding amount of	125,000.00
Makes a total of . . .	$4,041,452.59

The City has in addition, since consolidation, made the following annual budget appropriations for the maintenance of the Botanical Garden and the Zoological Park:

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	Zoological Park	Botanical Garden
1898	$ 62,000.00	————
1899	30,000.00	$ 30,000.00
1900	40,000.00	40,000.00
1901	65,000.00	55,000.00
1902	85,000.00	65,000.00
1903	104,965.00	70,000.00
1904	104,965.00	70,000.00
1905	134,965.00	70,000.00
1906	144,965.00	80,000.00
1907	144,965.00	80,000.00
	$916,825.00	$560,000.00

All of these institutions are private corporations controlled by boards of trustees, who administer them according to their own fancy, making the contracts for supplies and fixing the salaries, with the same generosity that characterizes their devotion to the arts, with this single exception, that, in this instance, the City pays the bills. Over eighty per cent of their maintenance is salaries. The City has no voice in the fixing of these salaries, and the employees are not selected from the civil lists made up after examinations in which all the citizens of New York are invited to participate, and owing to the facts that the City makes its constributions to them as it does to the hospitals, they claim exemption from the labor laws of the State applicable to the City and those contracting with it, and I am informed that one of the corporation counsels some years ago advised the City to this effect.

You can form an idea of where we are drifting under these circumstances by a glance at the salaries paid by the City to its Park Commissioners, under whose jurisdiction these museums are, and those paid by the City at the instance of the trustees of these institutions to the directors of the museums:

The salary, Park Commissioner, Manhattan and Richmond	$ 5,000
The salary, Director American Museum of Natural History	10,000
The salary, Director American Museum of Art . .	10,000
The salary, Director Aquarium	4,000
The salary, Park Commissioner The Bronx . . .	5,000
The salary, Director Zoological Park	8,000
The salary, Director Botanical Garden. . . .	6,000
The salary, Park Commissioner, Brooklyn . . .	5,000
The salary, Director Brooklyn Inst. of Arts and Sciences (in part)	2,500

The City's relation to these museums originated with the promoters of the museums, operating through the legislature. And while the City has never established any definite policy towards them it has complacently accepted the suggestions of the legislature and the friends of the

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museums to such an extent that its obligation for 1907 in their behalf exceed the cost of maintaining Central Park and all the other parks and playgrounds in the boroughs of Manhattan and Richmond; it exceeds the cost of maintaining Prospect Park and the 44 other parks in the boroughs of Brooklyn and Queens, and it exceeds the cost of maintaining the magnificent park and playground system of over four thousand acres in the Borough of The Bronx.

What I have said may invite criticism although it is not so intended. It is given merely as a statement of existing relations which I believe it my duty as a public official to impart to my fellow citizens who have to pay the bills.

I think we will all agree that New York has been generous to her museums, and and I have up to date never heard a complaint against this generosity.

As to the duty of the City to those institutions I have this to say. In the wisdom of the charter-makers they included them as a feature of the park development of the City. While their educational features might entitle them to a higher place in the consideration of the City authorities, which after all should only reflect public sentiment, under existing conditions, like the treatment of the parks themselves, as far as City expenditures are concerned, they should be curtailed until the necessities of the Health and Street Cleaning Departments are met; until every child in the City is provided with seating room in our public schools; until the Police and Fire Departments are amply provided to protect human life and property; and until we have put well under way a system of rapid transit communicaton, so necessary to every part of our great City.

I do not mean that the museums should be crippled in aid of these ends, but that they should be subordinated to them, and I can conceive of no more patriotic service that the promoters of such institutions having relation to the City can render the community, than by cooperating with the Board of Estimate in this behalf, by a reduction of expenses now, until the paramount necessities of our City are safely provided for.

New York has been generous in a thousand different fields of human endeavor. We contribute more in proportion for all the things that go to make up a great cosmopolitan city than any other community on the face of the globe, and you can rest assured she will at all times contribute her share to the cultivation of the arts and bringing home to her people the elevating sentiments which at all times abide in such surroundings.

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NOTE.

The title of the address which Mr. Franklin W. Hooper, Director of the Brooklyn Institute of Arts and Sciences, had expected to deliver, was "Popular Interest in the Arts and Sciences: How it May be Encouraged and Sustained."

In the absence of Mr. Hooper, by reason of a death in his family, his place on the list of speakers was kindly filled, without previous notice or preparation, by Dr. Hermon C. Bumpus, Director of the American Museum of Natural History. No record of this address was secured.

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RESOLUTION

ADOPTED BY THE ASSOCIATION, NOVEMBER 17, 1906.

"*Resolved:* that the Committee of Arrangements for the Twenty-fifth Anniversary Dinner, acting in conjunction with the Publication Committee, be directed to prepare and have printed an edition of 1,000 copies of a special memorial number of the Proceedings, to contain the addresses delivered at the dinner, together with such other facts in connection with the occasion as they may consider desirable."

[Abstract from the minutes of the meeting of the Association, held on Saturday, November 17, 1906].

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COMMITTEE OF ARRANGEMENTS

ARTHUR HOLLICK, *Chairman*

Howard Randolph Bayne — William Hinman Mitchill

Daniel Delehanty — John Blake Hillyer

Darwin Long Bardwell

PUBLICATION COMMITTEE

PHILIP DOWELL, *Chairman*

Arthur Hollick — William Thompson Davis

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STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

HISTORY,

ACT OF INCORPORATION,

CONSTITUTION AND BY-LAWS,

RULES AND REGULATIONS OF THE BOARD OF TRUSTEES

LIST OF MEMBERS, TRUSTEES, OFFICERS,

AND STANDING COMMITTEES.

NEW BRIGHTON, N. Y.

1906.

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"*Resolved*, that the publication committee be requested to prepare and have printed, at the earliest practicable date, a publication in pamphlet form, to include a brief history of the Association, the Act of Incorporation, Constitution and By-Laws, Rules and Regulations of the Board of Trustees, and a list of members, trustees, officers and standing committees."

[Abstract from the minutes of the meeting of the Board of Trustees, held on December 5th, 1905.]

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STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Late NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.]

HISTORY, ACT OF INCORPORATION, CONSTITUTION AND BY-LAWS, RULES AND REGULATIONS OF THE BOARD OF TRUSTEES, LIST OF MEMBERS, TRUSTEES, OFFICERS AND STANDING COMMITTEES.

Prepared and edited by the Publication Committee.

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HISTORY

The movement to organize a scientific society on Staten Island, which ultimately resulted in the incorporation of this Association, had its earliest inception about twenty-five years ago, when the feasibility of such an organization was informally discussed by a few residents who frequently enjoyed field trips together for the purpose of collecting specimens of natural history. The matter may be said to have assumed its first definite shape, however, on Friday, September 9th, 1881, when Arthur Hollick, Dr. Frederick Hollick and Dr. Nathaniel L. Britton

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happened to be together and made out a preliminary list of those whose interest it was thought might be enlisted. A small notebook was started in circulation, in which anyone who favored the idea was requested to inscribe his name. After some twenty names had been thus obtained an invitation was issued, signed by N. L. Britton, Arthur Hollick and Wm. T. Davis, to meet at the residence of Mr. Davis, on Saturday evening, November 12th, 1881, in response to which the following were present: Sanderson Smith, Alfred L. Carroll, Bradish J. Carroll, William T. Davis, Arthur Hollick, Dr. Nathaniel L. Britton, Samuel Henshaw, Charles W. Leng, Wilton G. Berry, Ernest F. Neilson, Ernest F. Birmingham, Edward C. Delavan, Jr., Charles W. Butler and George W. Wright. An organization was effected, a constitution and by-laws adopted, the name "Natural Science Association of Staten Island" chosen, and the following officers elected: president, Sanderson Smith; recording and financial secretary, Charles W. Leng; corresponding secretary, Arthur Hollick; curator, William T. Davis.

During the first few months following its organization the Association had no settled place of abode and held its meetings, by courtesy, either in Public School No. 3, on Prospect Avenue, New Brighton, or in the rooms of the Young Men's Catholic Union, on Carroll Place, New Brighton. In April, 1882, the Board of Trustees of the Village of New Brighton offered the Association the use of a large room in the Village Hall, rent free, which it occupied continuously for fourteen years.

As soon as these permanent quarters were secured a beginning was made toward the foundation of a museum, which steadily grew to larger and larger proportions, until it finally reached its present dimensions. On November 10th, 1883, the first number of the Proceedings was issued, in which may be found abstracts of the reports of the officers for the preceding year, as follows: "The treasurer reported the Association free from debt and with a balance of $28.00 in the treasury.

'The secretary reported a total of 70 members on the roll and an average attendance of 17 at each meeting.

'The curator reported 56 separate donations to the collections, consisting of 412 objects, besides additions to the library."

The publication of the Proceedings resulted in an immediate and rapid increase in the library through exchange of publications, and the proper care of the books soon became, as it is at the present time, one of the most troublesome administrative problems with which the Association had to deal.

After about four years the experimental stage was thought to have

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been successfully passed, and the incorporation of the Association was decided upon and accomplished, in 1885, through the following instrument:

TO ALL WHOM IT MAY CONCERN:—

The undersigned, citizens of the United States, and of the State of New York, and residents of the County of Richmond, desiring to associate themselves for scientific purposes, and to form a body corporate under the provisions of Chapter 319 of the laws of 1848, entitled "Act for the Incorporation of Benevolent, Charitable, Scientific and Missionary Societies," and the several acts amendatory thereof, do hereby make, sign, and acknowledge the following certificate of incorporation:

(1.) The name and legal title of this society shall be "THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND."

(2.) The particular business and object of this Association shall be to collect and preserve objects of natural science and antiquity, with special reference to local matters, and to diffuse correct knowledge in regard to same, by means of publications, meetings and public lectures.

(3.) The management of the business and affairs of this Association shall be intrusted to a board of five trustees, which, for the first year of its incorporation, shall consist of the following persons:—Alfred Ludlow Carroll, M. D., Ernest A. Congdon, Arthur Hollick, Ph. B., William T. Davis and Samuel Henshaw.

(4.) The principal office of this Association shall be located in the village of New Brighton, in the State of New York, and the County of Richmond aforesaid.

In witness whereof we have hereunto annexed our hands and seals on this the 19th day of January, in the year of our Lord one thousand eight hundred and eighty-five.

ALFRED LUDLOW CARROLL.
ERNEST A. CONGDON.
ARTHUR HOLLICK.
WILLIAM T. DAVIS.
SAMUEL HENSHAW.

STATE OF NEW YORK, }
COUNTY OF RICHMOND. }

On this, the 19th day of January, 1885, appeared before me Alfred Ludlow Carroll, M. D., Ernest A. Congdon, Arthur Hollick, Ph. B., William T. Davis and Samuel Henshaw, to me personally known to be the same persons described in and who signed and executed the foregoing certificate, and they severally acknowledged the execution thereof.

ROBERT HUMPHREY,
Notary Public, Richmond Co., N. Y.

I, the undersigned, Justice of the Supreme Court, of the Second Judicial District, hereby approve the within certificate, and consent to the filing of the same.

C. E. PRATT, J. S. C.

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Filed with the County Clerk of Richmond Co., N. Y., on Friday, January 30th, 1885.

ARTHUR HOLLICK, Ph. B.
SAMUEL HENSHAW.

Filed with the Secretary of State of New York State, on Thursday, February 19th, 1885.

ALFRED LUDLOW CARROLL, M. D

During the next few years the meetings were poorly attended, and the membership steadily declined until it reached its low water mark of 36 in 1892. These were anxious times for those who had the success and welfare of the Association at heart. The administrative and scientific work devolved upon a constantly lessening number of active workers, and while the collections and library continued to increase in bulk and value, the income of the Association and the interest in its efforts and aims were constantly waning. Probably the greatest source of anxiety was the uncertainty in regard to the permanency of the quarters in the Village Hall. A new board of Village Trustees might order the Association to vacate any year, and with the limited means at command it would have been impossible to house or even to store the collections and library for any length of time. A movement was therefore started in 1889 to raise a building fund, and subscriptions amounting to $1,600.00 were pledged, but shortly afterwards the Association was advised that quarters would be provided for its museum and library in the then newly projected Staten Island Academy building, and the movement was abandoned.

The annual meeting of November 12th, 1892, inaugurated a new epoch in the history of the Association. At that meeting Mr. Walter C. Kerr was elected president, and his energy and clear insight into conditions soon made themselves felt. The membership began to increase at once. At the end of the next three years it was larger than at any previous period in the history of the Association; and it has steadily increased ever since, largely by the addition of members who, while not taking an active part in scientific work, are pleased to support the Association as representing a valuable factor in the intellectual activity of the community.

In 1896 co-operation was effected on the most generous of terms with the trustees of the Staten Island Academy, and the museum and library of the Association were transferred and housed in permanent quarters in the Academy building. Perhaps nothing that has occurred has so clearly indicated the advisability of providing for further expansion as the growth of the collections since they were placed where they

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were known to be safe and free from possible injury or disturbance. The room which in the beginning was ample to accomodate and display the accumulations of fourteen years is now, after only nine years in the Academy, so full that it is little better than a storeroom, and valuable material is waiting, ready to be donated as soon as additional space can be provided for it.

The movement for wider activities and broader scope in the affairs of the Association began to assume definite shape during the summer of 1904, when information was informally sought and obtained by the secretary in regard to the relations between the Municipality and institutions such as the Brooklyn Institute of Arts and Sciences, the American Museum of Natural History, the New York Botanical Garden, etc. During the following autumn the executive committee of the Association was formally requested to consider the whole subject and to report what steps it would be advisable to take in order that co-operation with the Municipal authorities might be effected. Their recommendations resulted in the appointment, at the regular meeting on January 21st, 1905, of a committee on incorporation, consisting of President Howard R. Bayne, William A. Shortt, Montague Lessler and Edward C. Delavan, and a committee on change of name, consisting of William H. Mitchill, William T. Davis and Dr. Arthur Hollick.

At the regular meeting on February 18th the latter committee submitted a report containing suggestions for changes in the name of the Association, and the one formally approved was "The Staten Island Association of Arts and Sciences."

At a special meeting on March 16th the committee on incorporation submitted a draft of a proposed act to incorporate the Staten Island Association of Arts and Sciences, which was approved, and the committee was requested to have the act introduced in the State Legislature. This was done on March 21st; it passed without opposition and was signed by the Governor on May 17th.

At the regular meeting on May 20th the following resolution was adopted:

"*Resolved:* that a special meeting of the Natural Science Association of Staten Island be called for Saturday evening, June 3rd, 1905, at the Staten Island Academy, for the purpose of taking action under Section 6 of Chapter 526 of the Laws of 1905, incorporating the Staten Island Association of Arts and Sciences, and that the secretary include in the call for the meeting the following resolution:

Resolved: that the Board of Trustees of this Association be and they are hereby authorized to assign and convey to the Staten Island Association of Arts and Sciences all the property, real and personal, owned and held by this Association."

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At the special meeting on June 3rd the foregoing resolution was adopted, and the assignment was formally authorized by the adoption of the following resolutions:

"*Resolved:* that all the property of the Natural Science Association of Staten Island be assigned to the Staten Island Association of Arts and Sciences.

Resolved: that a suitable deed of assignment be prepared, expressing a nominal consideration, and that the same be executed by the President and Board of Trustees, in the name of said Association and the said Board of Trustees, and properly acknowledged.

Resolved: that the said deed and all the property thereby assigned be delivered to the Staten Island Association of Arts and Sciences by the President of the Natural Science Association of Staten Island."

The Natural Science Association of Staten Island then adjourned *sine die* and was replaced by the Staten Island Association of Arts and Sciences.

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ACT OF INCORPORATION.

Laws of New York—1905.

CHAP. 526.

AN ACT to incorporate the Staten Island association of arts and sciences and to provide for the care and housing of its museum and library by the city of New York.

Accepted by the city.

Became a law, May 17, 1905, with the approval of the Governor. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

§ 1. Louis H. Achilles, Augustus Acker, Darwin L. Bardwell, Howard R. Bayne, Charles P. Benedict, Read Benedict, Michael Berardini, Nils Bergquist, Wilton G. Berry, Herman Beyer, Samuel A. Blan, J. Harvey Bostwick, Brewster Boyd, Willard A. Boyd*, Nathaniel L. Britton, Orrin L. Brodie, Henry B. Brownell, John M. Carrere, James Chapin, Edward B. Clapp†, Lester W. Clark, Sr., Lester W. Clark, Jr., Oliver D. Clark, Walter L. Clark, Thomas Craig, George Cromwell, Osborn M. Curtis, Morgan Davis, William T. Davis, Nathaniel B. Day, Daniel Delehanty, Edward C. Delavan, John De Morgan, Lewis Denton, Samuel M. Dix, Philip Dowell, Edward P. Doyle, Herbert M. Dunning‡, Stafford C. Edwards, Lothar W. Faber, Jarvis R. Fairchild, John T. Fetherston, Ernest Flagg, Lewellyn W. Freeman§, Oliver P. Geoffroy, Louis P. Gratacap, William B. Grubbe, Daniel S. Hage, Daniel J. Haverty Walter B. Hayward, Samuel A. Henszey, Milo D. Herron, J. Blake Hillyer, William R. Hillyer, Arthur Hollick, Rupert H. Hopkins, George S. Humphrey, Charles W. Hunt, Fred F. Hunt, Charles A. Ingalls, Manuel J. Johnston‖, A. K. Johnston, William A. Johnston, T. F. Kane, W. F. Keeney, Walter C. Kerr, A. C. Knothe, Winfield R. Koller, Wheaton B. Kunhardt, William J. Lederle, Charles W. Leng, Montague Lessler, James P. Lough, William McDonald¶, Arthur A. Michell, William H. Mitchill, Ira K. Morris, Joseph Neuburg, Leavitt C. Parsons, Frederick E. Partington, Horace W. Patterson, Alexander

* **Insert the name Edward C. Bridgman, inadvertently omitted in the original.**
† **For "Edward B. Clapp" read Ebenezer B. Clapp.**
‡ **For "Herbert M. Dunning" read Herbert S. Dunning.**
§ **For "Lewellyn W. Freeman" read Llewellyn W. Freeman.**
‖ **For "For Manuel J. Johnston" read Manuel J. Johnson.**
¶ **For "William McDonald" read William Mac Donald.**

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Perry, Charles M. Porter, W. L. Rolands*, George S. Scofield, William A. Shortt, Alanson B. Skinner, Sanderson Smith, S. McK. Smith, Benjamin J. Stanton, Mead E. Stone†, Edward M. Stothers, Edwin Stumpp, William A. Suydam, Arthur G. Thompson, Lawrence A. Toepp, Louis L. Tribus, Charles R. Tucker, George W. Tuttle, E. E. Valentini, J. E. Vidal, Norman S. Walker, Jr., William C. Walser, William Y. Wemple, Edward J. Wheeler, George M. Whitehouse, William G. Willcox, and such other persons as may hereafter be associated with them and their successors, are hereby created a body corporate under the name of the Staten Island association of arts and sciences, to be located in the borough of Richmond, city of New York.

§ 2. The purpose of the said corporation shall be to promote intellectual activity and intercourse and to encourage an interest in the sciences, arts and history; to collect and preserve objects of scientific and historic interest, especially such as relate to Staten Island; to establish and maintain a public museum and reference library; to provide facilities for recording and publishing scientific and historical information; to preserve from needless destruction such plants and animals as are harmless and to protect objects and places of natural beauty, of scientific and of historic interest.

§3. The said corporation shall have power to make and adopt a constitution and by-laws; makes‡ rules and regulations for the transaction of its business; the admission, suspension and expulsion of members of said corporation and for the number, election, terms and duties of its officers; and make such rules and regulations as may be necessary for the safekeeping and proper use of its property; and may from time to time alter or modify its constitution, by-laws, rules and regulations, and shall be subject to the provisions of the general corporation law.

§ 4. Howard R. Bayne, Arthur Hollick, J. Blake Hillyer, Charles A. Ingalls, William T. Davis, George S. Scofield, Walter C. Kerr, William A. Johnston, Lester W. Clark, senior, Louis P. Gratacap, Charles W. Leng, William H. Mitchill and George H. Humphrey§, together with the president of the borough of Richmond and the district superintendent of schools in said boroughs‖, ex-officio, shall be and hereby are declared to be the trustees of said corporation until their successors shall be elected pursuant to such constitution and by-laws as the corporation may adopt. Five trustees shall constitute a quorum for the transaction of business.

* For "W. L. Rolands" read Willis L. Rowlands.
† For "Mead E. Stone" read Medad E. Stone.
‡ For "makes" read make.
§ For "George H. Humphrey" read George S. Humphrey.
‖ For "boroughs" read borough.

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§ 5. Said corporation may take and hold by purchase, grant, lease, gift, devise or bequest, either absolutely or in trust, real or personal property, necessary or proper for the purposes of its incorporation and for the endowment of the same or any branch thereof.

§ 6. The natural science association of Staten Island and its board of trustees are hereby authorized to assign and convey all the property, real or personal, owned and held by it, and the said property when so transferred to, shall vest in and be held and used for the said Staten Island association of arts and sciences, as its successor, for the uses and purposes set forth in section two of this act. When the transfer of this property hereby authorized shall be completed and an affidavit made to that effect by the president of the natural science association of Staten Island and sworn to before a justice of the supreme court, shall be filed in the office of the secretary of state, the corporate existence of the said natural science association of Staten Island shall cease and determine.

§ 7. The commissioners of the sinking fund of the city of New York may authorize the president of the borough of Richmond to provide such room or rooms in the borough building, in the borough of Richmond, city of New York, as may not otherwise be in use, and they may otherwise provide and set apart land in said borough for the erection of a suitable building or buildings thereon, for the keeping and maintaining of the museum, collection and library of the Staten Island association of arts and sciences, subject to all the conditions in section two hundred and seventeen, chapter four hundred and forty-six, of the laws of nineteen hundred and one, and for the purpose of providing means for the erection of said building or buildings it shall be the duty of the comptroller of the city of New York, upon being authorized thereto by the board of estimate and apportionment, to issue and sell corporate stock of the city of New York, in the manner now provided by law, sufficient for the same; and the board of estimate and apportionment may include in the annual budget for the maintenance and care of said museum, collection and library of the Staten Island association of arts and sciences a sum not exceeding ten thousand dollars, and the board of trustees of the said Staten Island association of arts and sciences are empowered to enter into a contract with the proper officials of the city of New York, looking to the leasing of such rooms and building or buildings, and the care of its museum, collection and library as herein provided.

§ 8. The museum, collection and library of the said Staten Island association of arts and sciences shall be open and free to the public at all reasonable times on such terms of admission as shall be approved

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by the board of trustees of said association acting in conjunction with the commissioner of public works for the borough of Richmond, in the city of New York, so long as the city of New York shall provide a place for its care and maintenance.

§ 9. This act shall take effect immediately.

STATE OF NEW YORK, Office of the Secretary of State, } ss.:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

JOHN F. O'BRIEN,
Secretary of State.

RESOLUTION ACCEPTING THE ACT OF INCORPORATION.

"*Resolved:* that the Act of Incorporation (Chapter 526 of the Laws of 1905) be and is hereby accepted and adopted by the incorporators constituting the Staten Island Association of Arts and Sciences."

[Abstract from the minutes of the meeting of the incorporators, held on June 3rd, 1905.]

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CONSTITUTION AND BY-LAWS.

CONSTITUTION

ARTICLE I.

The provisions of the Act of Incorporation, Chapter 526 of the Laws of 1905, are adopted and form part of this Constitution.

ARTICLE II.

The management of the affairs of the Association shall be vested in a board of fifteen trustees, composed of thirteen members to be elected by the Association at the first annual meeting and thereafter as provided in the By-Laws, together with the president of the Borough of Richmond and the district superintendent of schools in said Borough for the time being, as ex-officio members. A president, first and second vice-presidents, recording secretary, corresponding secretary and treasurer shall be elected yearly by the said Board at its annual meeting. Any vacancy in either of the above offices, or in the Board of Trustees, except in the case of ex-officio members, may be filled by the Board of Trustees, and the persons so selected shall serve until their successors are elected. Any trustee absent for three consecutive meetings of the Board may, unless an excuse for such absence satisfactory to the Board be presented, be declared by the Board to have vacated the office of trustee.

ARTICLE III.

The Board of Trustees may make such rules and regulations, appoint such committees and employ such persons as they may deem advisable to aid in the performance of the duties expressed or implied in the Act of Incorporation.

ARTICLE IV.

The principal office of the Association shall be located in the Borough of Richmond in the City and State of New York.

ARTICLE V.

Amendments to this Constitution, not incompatible with the Act of Incorporation, may be made by a vote of two-thirds of the members present and qualified to vote at any special meeting of the Association called for that purpose, or at any regular meeting, on not less than five days' notice of such meeting by mail, sent to each member and including the text of the proposed amendments, provided such proposed

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amendments shall have been previously submitted in writing and announced at a regular meeting of the Association.

BY-LAWS.

I.—Meetings.

Sec. 1. *Annual Meetings*: The annual meetings of the Association shall be held on the third Saturday evening of May. Notice of each meeting shall be mailed by the recording secretary to all members and patrons qualified to vote, not less than five days prior to the date of the meeting, and ten members shall constitute a quorum for the transaction of business.

Sec. 2. *Regular Meetings*: The regular meetings of the Association shall be held on the third Saturday evening of each month from October to May inclusive. Not less than three days' notice of each meeting shall be mailed by the recording secretary to all ex-officio, active and life members and patrons. Ten members shall constitute a quorum for the transaction of business, but a quorum for the prosecution of scientific work or for the carrying out of a scientific program shall always be assumed.

Sec. 3. *Special Meetings*: The president may of his own motion, and he shall on the written request of ten or more members qualified to vote, call a special meeting of the Association. Not less than five days' notice of the meeting shall be given to all members qualified to vote, and the notice shall include a statement of the purpose for which the meeting is called. At all special meetings ten members shall constitute a quorum for the transaction of business.

II.—Order of Business.

Sec. 1. *Annual Meetings*: The Order of Procedure at the annual meetings of the Association shall be:

1.
Reading of Minutes.
2.
Annual Report of the Board of Trustees.
3.
Annual Reports of Officers.
4.
Election of Trustees for the Ensuing Year.
5.
Deferred or New Business.

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6.
Annual Address of the President.
7.
Scientific Program.
8.
Adjournment.

Sec. 2. *Regular Meetings*: The Order of Procedure at the regular meetings of the Association shall be:

1.
Reading of Minutes.
2.
Miscellaneous Business.
3.
Scientific Program.
4.
Adjournment.

Sec. 3. *Special Meetings*: The Order of Procedure at all special meetings of the Association shall be:

1.
Reading of the Notice of the Meeting.
2.
Action on the Specified Object of the Meeting.
3.
Adjournment.

III.—Membership.

Sec. 1. The Association shall consist of active members and may also include life members, honorary members, corresponding members and Patrons. Active members, life members and elected patrons only shall have any rights in the property of the Association, and they only shall be eligible to any elective office.

Sec. 2. *Active Members*: Active members shall be members of the Corporation and be not less than fifteen years of age. Nominations for active membership shall be made and seconded in writing at a regular meeting of the Association, and the nominees shall be voted for by ballot at the next regular meeting or at a special meeting called for that purpose, and three negative votes shall reject. Each active member shall on election pay an entrance fee of three dollars ($3.00) if elected previous to the regular meeting in January, or one dollar and fifty cents ($1.50) if elected at or subsequent to the January meeting and

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prior to the regular meeting in April, and thereafter annual dues of three dollars ($3.00) payable at the beginning of each fiscal year. The entrance fee shall be remitted if members be elected at the regular meeting in April. Active members shall be entitled to vote at all meetings of the Association; to receive free one copy of each publication issued by the Association; and to have free admission and access to the museum and library of the Association and to all lectures or other entertainments given under the auspices of the Association. Any active member one year in arrears of dues shall be suspended from the privileges of membership until such arrears of dues are paid, and if these are not paid within six months thereafter such member may be dropped from the roll by a majority vote of the trustees present at any meeting of the Board.

Sec. 3. *Life Members*: Any active member may become a life member by contributing at one time fifty dollars ($50.00) to the general funds of the Association. Life members shall have all the privileges of active members,and they shall be relieved from the payment of annual dues.

Sec. 4. *Honorary Members*: Honorary members shall be chosen from those persons who have rendered conspicuous service in line with the general purposes of the Association. They shall be elected by the Board of Trustees, and their number shall be limited to twenty-five. Nominations to honorary membership may be submitted to the Board of Trustees by any member of the Association at any time.

Sec. 5. *Corresponding Members*: Corresponding members shall be chosen from those persons residing at a distance who are known to be interested in the purposes of the Association, or who are actively engaged in promoting similar purposes. They shall be elected by the Board of Trustees. Nominations to corresponding membership may be submitted to the Board of Trustees by any member of the Association at any time.

Sec. 6. *Patrons*: Any person contributing at any one time one hundred dollars ($100.00) to the general funds of the Association shall be a patron, and on election by the Board of Trustees shall enjoy all the privileges of life membership. Any active or life member may, upon such payment, become a patron without thereby forfeiting any of the privileges of such membership.

IV.—Officers.

Sec. 1. *President*: It shall be the duty of the president to preside at all meetings of the Board of Trustees and of the Association and to exercise the customary duties of a presiding officer. He shall deliver an address at the annual meeting following his election to office.

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Sec. 2. *Vice-Presidents*: It shall be the duty of the first vice-president to act as the presiding officer in the absence of the president and to exercise the functions of the office of president at such times as the president may be unable to act. In the absence or inability to act of the president or first vice-president the duties of the president shall be discharged by the second vice-president.

Sec. 3. *Recording Secretary*: It shall be the duty of the recording secretary to call any meeting to order at which the president and vice-presidents are absent; to keep the minutes of all meetings of the Association and of the Board of Trustees, and a corrected list of the names and last known addresses of all the members and patrons of the Association. He shall notify the trustees of their election to office and all members and patrons of their election, suspension and expulsion, and all committees of their appointment. He shall send all notices of meetings to members entitled to receive the same and conduct all official correspondence with them, except such as may pertain to the office of treasurer. He shall have charge of the official records of the Association and also of its Corporate Seal, which he shall affix and attest as directed by the Board of Trustees. He shall render a report at the annual meeting which shall include the number of members and patrons elected, resigned, deceased and dropped from the roll during the year; the total membership of the Association at date; the number of regular and special meetings held and the average attendance at each during the year.

Sec. 4. *Corresponding Secretary*: It shall be the duty of the corresponding secretary to keep a corrected list of the names and last known addresses of all the members and patrons of the Association. He shall conduct the general and unofficial correspondence of the Association and shall keep a complete file of all communications received by him or referred to him by the Board of Trustees, together with copies of all communications transmitted in reply to the same. He shall report at the regular meetings of the Association upon correspondence received and answered, and at the annual meeting he shall render a report showing the total number of communications received by, referred to, and answered by him during the year.

Sec. 5. *Treasurer*: The treasurer shall have charge of all moneys belonging to or under the control of the Association, and he shall keep and invest the same in such manner as the Board of Trustees may from time to time direct. He shall keep a corrected list of the names and last known addresses of all active and life members and patrons, showing their financial relations with the Association. He shall notify all

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members in regard to their dues and receive and account for all dues and all contributions to the funds of the Association and for any income that may accrue from any property owned or controlled by the Association. He shall pay all debts against the Association, subject to such rules and resolutions as the Board of Trustees may adopt, and he shall report to the Board from time to time, as required, the condition of the finances of the Association. At the annual meeting he shall render a report showing all receipts and expenditures for the entire year and all assets and liabilities. He shall give a bond in such sum and in such form as the Board of Trustees shall direct.

V.—Board of Trustees.

Sec. 1. *Election*: The elective trustees shall be voted for by ballot at the annual meetings of the Association, and at the first annual meeting the thirteen candidates who receive the largest number of votes shall be declared elected. At this meeting five trustees shall be elected for one year, four for two years, and four for three years, and at each subsequent annual meeting the vacancies shall be filled in a similar manner.

Sec. 2. *Annual Meeting*: The annual meeting of the Board of Trustees shall be held immediately after the annual meeting of the Association.

VI.—Fiscal Year.

The fiscal year shall commence on the day of the annual meeting.

VII.—Amendments.

Amendments or additions to these By-Laws may be made by a majority vote of the members present and qualified to vote at any special meeting of the Association called for that purpose; or at any regular or annual meeting of the Association, provided that such amendments or additions shall have been submitted in writing and announced at a previous regular meeting of the Association.

VIII.—General Provisions.

All procedure and business of the Association not fixed by the Constitution or By-Laws shall be determined by the Board of Trustees, and all questions of parliamentary order and procedure not specially provided for in the By-Laws shall be governed by Cushing's Manual.

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RESOLUTION ADOPTING THE CONSTITUTION AND BY-LAWS.

"*Resolved*: that the Constitution and By-Laws prepared by the committee and amended at this meeting of the Association be and they are hereby adopted, together with such verbal or grammatical changes as the committee may deem advisable for clearness of expression in the final drafting of the same."

[Abstract from the minutes of the meeting of the Association, held on October 21st, 1905.]

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RULES AND REGULATIONS OF THE BOARD OF TRUSTEES.

I.—Meetings.

In addition to the annual meeting of the Board, as provided for in the By-Laws, stated meetings shall be held on the first Saturday evening in January, April and October. Special meetings may be called by the president at any time.

Not less than two days' notice of each meeting shall be mailed by the secretary to all members of the Board.

II.—Order of Business.

The Order of Business at all stated meetings of the Board shall be as follows:

1. Reading of Minutes.
2. Report of Treasurer.
3. Report of Secretary.
4. Reports of Committees.
5. Election of Honorary and Corresponding Members and Patrons.
6. Unfinished Business.
7. New Business.
8. Adjournment.

III.—Standing Committees.

Executive Committee: The president, the recording secretary and the treasurer of the Association, together with two other members of the Board, shall constitute the executive committee, of which the president and the recording secretary shall respectively be the chairman and the secretary. Three members shall constitute a quorum for the transaction of business.

The committee shall have general charge of the affairs of the Association during the intervals between the meetings of the Board of Trustees. They shall transact such business and execute such orders as the Board may refer to them, and they may initiate such other business as they may deem advisable for the welfare of the Association and report thereon at the next meeting of the Board.

Any action by the committee not previously authorized by the Board shall be deemed to be in force until formally disapproved by resolution

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of the Board; but the committee shall not incur any liability in excess of fifty dollars ($50.00) without the sanction of the Board.

Auditing Committee: The auditing committee shall consist of two members of the Board of Trustees.

They shall from time to time examine and verify the books and accounts of the treasurer, especially the annual report of the treasurer, and report thereon to the Board.

Publication Committee: The publication committee shall consist of the recording secretary and two other active members of the Association.

The committee shall have general charge of the editing, printing, and distribution of all publications issued by the Association. They shall formulate rules for methods of citation, terminology and nomenclature to be followed in all contributions submitted for publication by the Association, and determine the size and form of all publications and the style of typography to be used in the printing of the same.

General Provisions: The president shall be a member, ex-officio, of all standing committees.

Except in the case of ex-officio members the president shall appoint all members of standing committees and fill all vacancies in the same.

IV.—Special Committees.

The president shall appoint all members of special committees, unless they are specially appointed by resolution of the Association or of the Board of Trustees, and fill all vacancies in the same.

[Adopted December 5th, 1905.]

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ACTIVE AND LIFE MEMBERS

The date in parenthesis indicates the year in which the member was elected.
A black letter O indicates that the member was one of the organizers of the Natural Science Association of Staten Island.
A black letter L indicates that the member is a life member.

A

Louis Henry Achilles, West New Brighton. (1902).
Augustus Acker, New Brighton. (1902).
Arthur Huntington Allen, New Brighton. (1905).

B

Louis Balmat Baker, New Brighton. (1905).
Darwin Long Bardwell, New Brighton. (1904).
Howard Randolph Bayne, New Brighton. (1895).
Charles Patrick Benedict, West New Brighton. (1897).
Read Benedict, West New Brighton. (1902).
Michael Berardini, Rosebank. (1898).
Nils Bergquist, Tompkinsville. (1899).
Wilton Guernsey Berry, 48 W. 73rd St., New York. (1881). O.
Samuel Augustus Blan, Port Richmond. (1904).
James Harvey Bostwick, Tompkinsville. (1902).
Brewster Boyd, West New Brighton (1903).
Willard Albion Boyd, New Brighton. (1905).
Thomas A. Braniff, Tompkinsville. (1906).
Edward Clark Bridgman, Stapleton. (1895),
Nathaniel Lord Britton, 2965 Decatur Ave., New York (1881). O.
Orrin Lawrence Brodie, Port Richmond. (1904).
Henry Barnard Brownell, New Brighton. (1902).

C

John Merven Carrère, 101 E. 65th St., New York. (1896).
James Chapin, New Brighton. (1904).
Ebenezer Billings Clapp, 425 4th Ave.. New York. (1897).
Lester Williams Clark, Sr., New Brighton. (1897).
Lester Williams Clark, Jr., New Brighton. (1897).
Oliver Durfee Clark, Tompkinsville. (1904).
Walter Leighton Clark, Dongan Hills. (1898)
Howard Henderson Cleaves, Princes Bay. (1905).
*Thomas Craig, 1013 Sherbrook St., Montreal, Can. (1889). L.
George Cromwell, Dongan Hills. (1898).
Osborn Marcus Curtis, New Brighton. (1902).

* Elected an honorary life member Dec. 14th, 1901.

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D

Morgan Davis, Stapleton. (1884).
*William Thompson Davis, New Brighton. (1881). O. L.
Nathaniel Briggs Day, New Brighton. (1902).
Edward Close Delavan, New Brighton. (1881) O.
Daniel Delehanty, New Brighton. (1902).
John De Morgan, West New Brighton (1902).
Lewis Homer Denton, West NewBrighton. (1904).
Samuel Morris Dix, Stapleton. (1897).
Timothy Florence Donovan, West New Brighton. (1906).
Philip Dowell, Port Richmond. (1903).
Edward Puritan Doyle, Port Richmond. (1902).
Herbert Sylvester Dunning, New Dorp. (1904).

E

Stafford Clarence Edwards, New Brighton. (1905).
George T. Egbert, Mariners Harbor. (1905).

F

Lothar Washington Faber, 401 West End Ave., New York. (1881).
Richard Fair, Stapleton. (1906).
Jarvis Rose Fairchild, New Brighton. (1902).
John Turney Fetherston, New Brighton. (1904).
Ernest Flagg, Dongan Hills. (1897).
Llewellyn Warren Freeman, Mariners Harbor. (1904).
Thomas Alexander Fulton, Tompkinsville. (1905).

G

Oliver Philip Geoffroy, West New Brighton. (1892).
Louis Pope Gratacap, West New Brighton. (1881).
James Percy Griffin, New Brighton. (1905).
William Brush Grubbe, West New Brighton. (1904).

H

Daniel S. Hage, Dongan Hills. (1902).
Daniel James Haverty, New Brighton. (1896).
Walter Brownell Hayward, Tompkinsville. (1902).
Samuel Alexander Henszey, New Brighton. (1902).
Milo Dibble Herron, 66 W. 107th St., New York. (1904).
John Blake Hillyer, New Brighton. (1896).
William Ross Hillyer, Port Richmond. (1902).

* Became a life member 1906.

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Arthur Hollick, New Brighton. (1881). O.
Rupert Henry Hopkins, West New Brighton. (1905).
James Clayton Howard, Stapleton. (1905).
Charles Humphrey, New Brighton. (1905).
George Scranton Humphrey, West New Brighton. (1897).
Charles Wallace Hunt, Stapleton. (1881).
Frederick Furneaux Hunt, New Brighton. (1894).
William Floyd Hunt, Stapleton. (1897).

I

Charles Arthur Ingalls, West New Brighton. (1899).

J

Manuel John Johnson, New Brighton. (1903).
Algernon Knox Johnston, Princes Bay. (1893).
William Armour Johnston, Princes Bay. (1896).

K

Thomas Francis Kane, New Brighton. (1903).
Watson Frederick Keeney, West New Brighton. (1905).
Walter Craig Kerr, Dongan Hills. (1892).
Adolph Charles Knothe, Tompkinsville. (1903).
Winfield Ritter Koller, Port Richmond. (1903).
*Wheaton Bradish Kunhardt, 43 Exeter St., Reading, Pa. (1885). L.

L

William Joseph Lederle, 4215 Stiles St., W. Philadelphia, Pa. (1896).
Charles William Leng, West New Brighton. (1881). O.
Montague Lessler, Tompkinsville. (1904).
James Perot Lough, Tompkinsville. (1902).
Thomas Owen Lowe, Tompkinsville. (1905).

M

William Mac Donald, Port Richmond. (1903).
John Martin, Stapleton (1905).
Arthur Ahmuty Michell, West New Brighton. (1903).
William Hinman Mitchill, Port Richmond. (1902).

P

Leavitt Cosley Parsons, Tompkinsville. (1903).
Frederick Eugene Partington, New Brighton. (1901).
Horace Wilber Patterson, New Brighton. (1903).
Alexander Perry, New Brighton. (1897).

* Became a life member 1896.

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R

John Rader, New Brighton. (1905).
Thomas Daniel Rambaut, New Brighton. (1905).
Willis Locke Rowlands, Tompkinsville. (1903).

S

George S. Scofield, Rosebank. (1902).
William Allaire Shortt, Tompkinsville. (1899).
Alanson Skinner, Tompkinsville. (1903).
Samuel Mc Kee Smith, New Brighton. (1903).
*Sanderson Smith, Port Richmond. (1881). O. L.
Benjamin Jefferson Stanton, Tompkinsville. (1904).
Medad Elisha Stone, New Brighton. (1896).
Edward Merrell Stothers, Port Richmond. (1897).
Edwin Adolph Stumpp, New Brighton. (1904).
William Asay Suydam, Castleton Corners. (1903).

T

Arthur Gordon Thompson, Rosebank. (1901).
Lawrence Adam Toepp, West New Brighton. (1902).
Louis Lincoln Tribus, Stapleton. (1895).
Charles E. Trout, West New Brighton. (1905).
Charles Rollins Tucker, New Brighton (1903).
George William Tuttle, New Brighton. (1904).

U

Guillermo F. Uhink, Tompkinsville. (1905).

V

Evelyn Ernst Valentini, Tompkinsville. (1905).
Joseph Eugene Vidal, Stapleton. (1902).

W

Norman Stewart Walker. Jr., Castleton Corners. (1902).
William Charles Walser, New Brighton. (1887).
William Yates Wemple, New Brighton. (1902).
Edward Jewitt Wheeler, West New Brighton. (1902).
George Meredith Whitehouse, 116 Riverside Drive, New York. (1895).
William Goodenow Willcox, West New Brighton. (1902).
John Warren Wiseman, West New Brighton. (1905).

* Elected an honorary life member Nov. 13th, 1897.

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MEMBERS OF THE BOARD OF TRUSTEES, 1905-1906

1.—Elective Members.

Howard Randolph Bayne, *president.*
Arthur Hollick, *secretary.*

Philip Dowell.
Louis Pope Gratacap.
John Blake Hillyer.
William Armour Johnston.
Walter Craig Kerr.
William Thompson Davis.
Charles Arthur Ingalls.
George Scranton Humphrey.
Charles William Leng.
George S. Scofield.
William Hinman Mitchill.

2.—Ex-Officio Members.

The President of the Borough of Richmond,
Hon. George Cromwell.

The District Superintendent of Schools in the Borough of Richmond,
Darwin Long Bardwell.

OFFICERS OF THE ASSOCIATION, 1905-1906.

President—Howard Randolph Bayne.
First Vice-President—William Thompson Davis.
Second Vice-President—William Hinman Mitchill.
Recording Secretary—Arthur Hollick.
Corresponding Secretary—Philip Dowell.
Treasurer—John Blake Hillyer.

STANDING COMMITTEES, 1905-1906.

1.—EXECUTIVE COMMITTEE.

Howard Randolph Bayne, *chairman.*
Arthur Hollick, *secretary.*
John Blake Hillyer.
William Hinman Mitchill.
Charles Arthur Ingalls.

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2.—AUDITING COMMITTEE.

George Scranton Humphrey, *chairman.*
Charles Arthur Ingalls, *secretary,*
Howard Randolph Bayne, *member ex-officio.*

3.—PUBLICATION COMMITTEE.

Philip Dowell, *chairman.*
Arthur Hollick, *secretary.*
William Thompson Davis.
Howard Randolph Bayne, *member ex-officio.*

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

FORMERLY

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

VOLUME II

OCTOBER, 1907—MAY, 1909

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

PRESS OF
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1910

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VOL. II October 1907-January 1908 Part I

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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[Issued October 17, 1908]

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

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[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOL. II OCTOBER, 1907–JANUARY, 1908 PART I

The Seventeen-Year Cicada on Staten Island in 1907[1]

BY WM. T. DAVIS

In 1890 two imago seventeen-year cicadas, *Cicada septendecim* L., and three pupa skins were recorded from Staten Island (see *Proc. Nat. Sci. Assn. S. I.* Feb. 10, 1894). At that time there was no known brood to which these insects could be assigned. In 1898 Mr. C. L. Marlatt proposed a new nomenclature for the broods of the periodical cicada, and at the same time called attention to several broods that had remained unnumbered. In *Bulletin* 18 (new series), U. S. Dept. of Agriculture, Division of Entomology, he writes as follows of Brood XV: "This brood is represented by the colony appearing at Tivoli, Dutchess County, and Galway, Saratoga County, N. Y., in June, 1890, as recorded by Prof. J. A. Lintner in his seventh report, pages 297–301. Mr. Davis records the occurrence of scattering individuals the same year on Staten Island. In a letter of June 2, 1890, Prof. J. B. Smith, New Brunswick, N. J., reports that the periodical cicada had been taken by several Newark collectors, and had also been observed at Anglesea, Cape May County."

[Vol. I, Part IV, pp. 93–136, was issued September 20, 1907.]

[1] Presented October 19, 1907.

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From the records of 1890 it was to be supposed that some evidence of the small and scattered brood of the periodical cicada, now known as Number XV, would be found in 1907 on Staten Island and in neighboring parts of New Jersey. On March 31, Mr. Alanson Skinner gave me a pupa that he had found under a stone at Woodrow. On June 22 I heard several cicadas singing in the trees at Woodrow and vicinity, and found two pupa skins in an apple tree on the farm of Mr. Isaac Wort. Mr. Wort had also heard the cicadas at various times, and he presented me with a pupa which he had found some time before my visit.

The following day a cicada was heard at Watchogue at the other end of the island. Later in the summer, while with Mr. Henry Bird in the Clove Valley, we each found a pupa skin of the seventeen-year cicada. Mr. Chas. P. Benedict informs me that he found in June many pupa skins as well as fully developed cicadas at his house on Manor Road, West New Brighton. In New Jersey the seventeen-year cicada occurred at Westfield, Plainfield, and Newfoundland.

It may be seen from the foregoing that the individuals were quite numerous and no doubt sufficiently so to insure the insect's appearance in 1924.

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Nests of the Barred Owl, Red-Shouldered Hawk, and Barn Owl on Staten Island in 1907[1]

By James Chapin

1. The Barred Owl, *Syrnium varium*.—During the spring of 1906, I had the pleasure of watching the family affairs of a pair of barred owls at Great Kills, Staten Island, a report of which may be found in the Proceedings 1: 73. 1906. This year, 1907, I was naturally interested in the same owl home, and made similar observations on the rearing of the young. As already stated, the nest is in a hole in a pin oak, about twenty-five feet from the ground, and was reached by "shinning" up a small sapling that we placed against the oak.

My first visit in the present year, 1907, was on March 23, when the nest contained two eggs of dirty whitish color. Incubation was in progress, one adult bird sitting on the nest, as on my next two visits, March 30 and April 6. On April 13 one egg was slightly cracked, and the following day both eggs had holes in them, while the peeping notes of the birds within were plainly audible. On April 20, the two young owls were still clothed in white down, and kept their eyes securely closed. In the hole there were found also more or less mutilated remains of three starlings, a goldfinch, a female sparrow-hawk, two meadow mice, and a gray rat. I tried feeding the little owls, and discovered that they would readily gulp down small pieces of meat put into their mouths.

By April 30 the young birds kept their eyes open habitually, and the old owls had become bolder, sitting in the neighboring trees and snapping their beaks. Again I found a good supply of food on hand: three flickers, a woodcock, and a bullfrog, while some of the sparrow-hawk's feathers still remained in the nest. The characteristic banded appearance of the wings of the young owls was plainly apparent on May 5.

[1] Presented October 19, 1907.

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On May 18, or in other words, about thirty-three days after hatching, one young barred owl was sitting on a dead branch outside the nest, but the other still remained inside, where some feathers of a red screech owl gave evidence of the recent bill of fare. The next day the venturesome owlet was discovered in a tree about fifty feet away, though the timid one was still content to stay at home. Since the day before, it had evidently been fed on a bluejay, whose feathers lay in the nest. On June 1 I again climbed the tree, but found the hole empty and without any additional remains of prey.

Meanwhile, my interest fully aroused, I had not been content with observing a single nest of "hoot owls," but kept my eyes and ears on the alert for more. On April 13 I was rewarded by finding another nest in a large dead tree near Richmond Hill, Staten Island; but as an ascent of the tree presented great difficulty I was content, for a time, to find a piece of white egg-shell at its base. On April 14 the owl was again in its nest, and two days later I climbed an adjoining tree, from which I could see two fledgeling owls in the nest. On April 27 I made a desperate effort, got up the tree, and found, besides the young owls, which seemed about three weeks old, an addled egg and a lot of feathers of flickers, which appear to be a favorite article of food with barred owls. On May 11, my last visit, I contented myself with a view from the adjoining tree, and the growing owls seemed to be progressing favorably.

My third barred owls' nest was in a hole near the top of a dead pin oak at Woodrow, which had been pointed out to me by Mr. Isaac Wort during the preceding winter. As early as March 3 I had seen a barred owl sitting at the entrance of it; but though we kicked the base of the tree several times during April we could not scare out the bird. On April 27 I decided to risk climbing, and when I had proceeded about fifteen feet upwards, out flew the crafty old owl. After a narrow escape from falling I finally reached the nest, about a foot and a half deep and containing one young owl, evidently about two and a half weeks old, and the usual flicker feathers. On May

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19 I saw one of the parents near the nest, and I hope that its only offspring safely reached maturity.

A fourth pair of barred owls was located by Mr. Wort at Green Ridge, and we found some eggshells of the previous year under a tree; still we failed to find their present abode, for the old nest is now occupied by a colony of bees. At several other localities, notably Willow Brook, I am certain there must be barred owls breeding, but proof of these suppositions must wait until next year.

During the breeding season at least, barred owls certainly eat numbers of birds, as might be expected from the abundance of migrants at that season; but it is true also that small mammals, swallowed with the hair on, do not leave such conspicuous traces as the feathers of birds. Thus it is possible that in the food of the young owls, small mammals may constitute a higher percentage than one would suppose. The variety of animals eaten by barred owls is well illustrated by the following list of carcases found in the nest at Great Kills by Mr. Howard Cleaves on April 25, 1907: three meadow mice, one rat, a starling, two garter-snakes, a frog, and an eel. We notice with satisfaction that they have taken kindly to the starling.

Crows are inveterate enemies of barred owls, for some inscrutable reason, and will gather in numbers to attack them whenever possible, so that the presence of an owl may often be known by the disturbance among the crows.

2. THE RED-SHOULDERED HAWK, *Buteo lineatus*.—Just as every pretentious patch of woodland in our vicinity may be said to have its resident pair of barred owls, so also it has its red-shouldered hawks, the work of one by night supplementing that of the other by day. This year we succeeded in finding four nests out of ten or twelve red-shouldered hawks, which, according to careful estimate, must still breed on Staten Island.

It seemed therefore very natural that the first hawks' nest should be found near the first barred owls' nest, at Great Kills. April 6, 1907, I noticed a nest in the crotch of a large pin oak, about fifty feet up. On the ground beneath lay a few fresh pine

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twigs, and on climbing up I found a practically complete, but empty, red-shouldered hawks' nest. On the 13th and 14th I visited it but found no bird on it, though the hawks were in the vicinity and were very noisy. On April 20 I again climbed up, to find the nest lined with pine and cedar twigs and containing two eggs, of a dull white ground color with brownish spots. The bird that had been sitting on the nest was in the streaked immature plumage of the species. Before I paid my next visit, April 30, a third egg had been added to the set, and the top of the nest, as well as a great many of the branches around it, had caught the white fluffy down-feathers from the old hawks. The eggs were still unhatched on May 5 and 19, and on the latter date the nest was decorated with a few leafy twigs from deciduous trees. At length, on the first of June, I found the grayish white young hawks in the nest, which was again ornamented with green leaves, and on the edge of the nest I found a mole. The branches beneath the nest were spattered with white excrement, a prominent feature about most red-shouldered hawks' nests after the young are hatched.

A second red-shouldered hawks' nest was located on April 13, about thirty feet from the ground, in a white oak in another patch of woods near Great Kills. When I first climbed up to it, April 20, there were already three eggs, and a few cedar twigs in this instance had been used in lining the nest. On May 5 two of the eggs had already hatched, disclosing the usual downy white birds, with egg teeth on their bills, and the third egg had a hole in it, through which another chick could be seen. Six days later, when two of the young hawks still showed their white egg teeth, I made the following notes of their color. The down was slightly buffy, the cere bright yellow, rims of eyelids greenish, iris brown, bill horn blue, and feet pale yellow. By June 1 there were large patches of dark feathers on them, but they were still unable to fly. The nest was lined with fresh leafy oak twigs, and contained some of the feathers of a scarlet tanager and a vireo. This was the last visit I was able to make to the nest, but I took one of the young hawks home, photographed it, and finally made it into a study specimen.

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In the meantime I had found a third nest at Eltingville, about forty feet up in a chestnut tree. This nest, on April 20, contained three eggs, and was lined with pine twigs. The bird sitting on it was in full adult plumage. By May 5 some cedar twigs had been added to the lining, but the eggs had not yet been hatched. On May 19 there were three young hawks covered with fluffy white down, and the nest was decked with twigs of a maple, an oak, and a black birch.

On June 1, while I was coming through the woods toward the nest but was still forty or fifty feet away from the tree, one of the adult hawks, without making a sound, swooped down at me, passing about five feet overhead. On climbing up to the nest I found it again lined with fresh twigs, and two of the young birds becoming alarmed uttered screams very similar to those of their parents. They were now somewhat over three weeks old, and dark feathers were appearing on the sides of their breasts, in the scapulars, and among the wing coverts, while their wing and tail quills were about two and a half inches in length. In the nest were feathers from a young chicken and a scarlet tanager.

A fourth nest was discovered by Mr. Isaac Wort at Woodrow, May 19, 1907, situated about thirty-five feet from the ground in a pin oak. Though I was present, I did not have time, either just then or later, to climb the tree; but Mr. Wort subsequently reported that he had seen the young hawks perched outside the nest when they were about to leave it.

Beside finding these four nests, we also located several other pairs of the same hawk, evidently breeding, at Todt Hill, Willow Brook, Richmond Hill, and Princes Bay. This was an easy matter on account of their conspicuous circling and screaming in the early spring. From the few remains found of their prey it would seem that the red-shouldered hawks, like barred owls, may eat a larger number of birds in the breeding season than is usually credited to them.

3. THE BARN OWL, *Strix pratincola*. In the PROCEEDINGS 1: 84. 1906, Mr. Wm. T. Davis has recorded the breeding of a

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pair of barn owls on the south side of Staten Island in 1906 and previous years. Mr. Irving said that these "monkey-faced owls" had laid two sets of eggs in one season, but this is to be doubted, especially in view of the fact that their young usually remain in or about the nest for two months.

Barn owls in this vicinity are apparently somewhat migratory, and the Staten Island birds were first noticed in the spring of 1907, on March 30. On May 5 there were three eggs on the floor of the pigeon loft where they breed. No nest was built, the eggs being deposited on the layer of rubbish, composed to a great extent of disintegrated owl pellets, which covered it. Unfortunately Mr. Galloway moved away soon afterward, and on our subsequent visits we had some difficulty in gaining admittance to the building. On July 7, however, Mr. Howard Cleaves and I were allowed to enter. One old owl and four young were in the loft, and an addled egg was discovered in the rubbish. The old owl flew out, but the young ones fought with their claws, snapped their beaks, and made a loud hissing noise. Mr. Cleaves made some fine photographs of the happy family seated on a dog house, and we departed, not to return until August 24. The young birds had then left the barn, having been last seen there, so I was told, about a week previously.

We trust, nevertheless, that no harm has come to them, and that they will continue to inhabit their pigeon loft in future years, perhaps even after the less domestic barred owl has been permanently banished from our island by real estate "improvements."

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Drift Bowlders from the Shore at Tottenville[1]

By Arthur Hollick

These specimens were all collected in about three hours' time without special search, on about 150 feet of the beach at the base of the bluff at Tottenville, fronting Raritan Bay. This bluff and the one at Princes Bay are two of the most interesting Drift deposits on Staten Island, by reason of the large variety of bowlders which may be found there. These particular specimens represent fossiliferous rocks of five geologic periods (Ordovician, Silurian, Devonian, Triassic, and Cretaceous) and at least ten distinct geologic horizons. Some of the fossils are species that we have found before, but others are additions to our previously published lists of Drift fossils. The additions are designated by asterisks (*).

Cretaceous. Clay ironstone concretions
- Molluscs
  - *Anomia* sp.*
  - *Mytilus* sp.*
- Plants
  - Rhizomorphs.
  - *Liriodendropsis simplex* Newb.
  - *Celastrophyllum elegans* Newb.*
  - *Laurophyllum elegans* Hollick.
  - *Cinnamomum* sp.*

Triassic. Shaly sandstone. Fucoid markings.

Devonian
- Hamilton limestone. *Camarotæchia congregata* (Conr.).*
- Schoharie grit. *Cyrtoceras* sp.*
- Oriskany sandstone. *Spirifer arrecta* Hall or *arenosa* Conr.

Silurian
- L. Helderberg limestone. *Leptæna rhomboidalis* Wahl.
- Clinton limestone?. Crustacean tracks.*

Ordovician
- Hudson sandstone. *Plectambonites sericeus* (Sowerby).
- Chazy limestone. *Stromatopora* sp.*
- Calciferous quartzite. Worm tracks.*

[1] Presented November 16, 1907.

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Nests of the Carpenter Ant[1]

By William T. Davis

One day last spring, while walking through the woods at the "Old Comp" near Richmond Valley, Staten Island, I discovered a white pine tree about a foot in diameter that had been broken off five feet eight inches from the ground. Upon examination it was found that a nest of carpenter ants, *Camponotus herculeanus pennsylvanicus* De Geer, had occupied the tree; that the insects had made too many tunnels in the solid trunk; and that the tall pine, which had stood a little over sixty feet high, had been weakened in consequence and blown down by a passing storm. Thus the ants had, with the aid of the wind, destroyed their own home.

During the summer a more thorough examination of the nest was made and the trunk was sawed into several sections. For a little over four feet from the ground the ants had hollowed out the interior of the tree, leaving only paperlike partitions that could for the most part be removed with the hand. This portion of the nest was four inches in diameter. Next above this there was a constricted portion like the neck of a bottle, with only a few galleries driven into the solid wood, and just above this the galleries expanded into a wider area fifteen inches long and occupying, as in the part below, about four inches of the diameter of the tree. Above this last collection of galleries there was a single fingerlike tunnel one-half inch in diameter and eight inches long, occupying the center of the trunk. The entire nest was a little over six feet in length.

While I was sawing the log into sections, a few of the ants were found in the least damaged part of the nest, and nineteen days later an ant ran out from one of the chambers of that part of the nest that was brought home. The ants are very loth to leave their old home, as will again be noted further on.

[1] Presented November 16, 1907.

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The constricted part of the nest was caused partly by the presence of a small knot, and it is quite evident that the division of the nest into what Dr. McCook aptly styles columnar and cavernous galleries was intentional on the part of the ants. In the cavernous portion there were a few vertical tunnels, often quite wide and curved somewhat with the annual rings of the tree, and these led to or through many chambers that had irregular floors and ceilings. There were sometimes also little rooms in the most unexpected places in the thickened parts between the ceiling of one of the large chambers and the floor of the one above. When the portion of the trunk containing this part of the nest was split vertically along some of the broad tunnels, projections like bay windows were revealed, having little holes in their sides leading to small chambers within.

Later a scarlet oak which contained a nest of the carpenter ant was found in the woods near Richmond. The tree was decayed near the base; it had been felled by lumbermen and had been sawed into several lengths before they came to the good portion of the trunk above the workings of the ants. With the assistance of Mr. James Chapin we sawed the logs, which were about fifteen inches in diameter, into shorter lengths, some of which we split lengthwise. As in the case of the pine tree nest, the ants had clung to their home in spite of the great disaster which had befallen them. They moved about very slowly, as it was late in the fall. When they were examined with a magnifying glass little mites were found clinging to their legs. It would appear very difficult for these mites to maintain their places considering their exposed position. This nest also consisted of a lower portion of finely drilled wood, so frail that a considerable part was removed quite easily. The largest and broadest tunnel occupied nearly the middle of the trunk and there were others within two inches of the outer bark. Probably owing to the different character of the wood, the columnar portion of the nest did not consist of paperlike partitions as in the white pine, but was carved out most thoroughly, leaving very little wood, which was also quite brittle. Dr. E. P. Felt has mentioned the different char-

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acter of the workings of this ant in elm and balsam. The cavernous galleries often partly encircled the central vertical tunnel, and in some places the tunnels that ran up the tree at the outer limits of the nest would extend for comparatively long distances without any side chambers. This nest ended in the solid trunk, several of the galleries reaching nearly the same height from the ground. The tunnel occupying the center of the trunk was exceeded by one of the outer ones within one and one-half inches of the bark. There were chambers nearly at the top of the nest.

Another nest was found in the same piece of woodland, that had been maintained by the ants over thirty feet from the ground. They had a long way to go to reach their door. These ants will work in cedar, white pine, pitch pine, balsam, elm, willow, cherry, maple, hickory, and oak, and they no doubt drill their tunnels successfully in the solid wood of any other native trees.

These observations on the nests of the carpenter ant may seem to traverse well known ground. It has, however, been recently stated that this species has no definite architecture, but follows the galleries of the wood boring larvæ, merely cleaning them out, and doing little excavating on its own account. While the ants no doubt first enter the trees through some previous openings, such as the galleries made by larvæ, and at knot holes, yet from examinations of the nests mentioned in this article, it appears that the carpenter ant truly deserves its name, and is a great worker in wood.

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Discovery of Lignitic and Bituminous Coal at Kreischerville[1]

By Arthur Hollick

During the past month a new excavation was made at Kreischerville, close to tide water and at a point further to the northwest than any of the older ones. The clay bed there exposed was therefore at a lower level both topographically and stratigraphically than any which we have had an opportunity to examine heretofore. It was found to be not only highly lignitic but also to contain a well defined bed of lignitic or brown coal, changed in places into a fairly good bituminous coal. The specimens collected show the transition from lignite to coal and while they are of interest to us scientifically they have no significance from the economic standpoint. In fact the relatively large amount of this material present rendered the clay valueless, and I understand that the excavation will be abandoned. We are fortunate in securing these specimens of Staten Island coal for our museum, as the opportunity may not occur again. They constitute an interesting addition to our local Cretaceous material.

[1] Presented December 21, 1907.

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A Staten Island Weather Record of Sixty Years Ago[1]

By William T. Davis

Mr. George Wotherspoon, a native of Scotland, was a resident of New Brighton for many years. In 1846 he lived on the Shore Road, now Richmond Terrace, in one of the houses built by the New Brighton Association. Later he owned a residence and several acres of land extending from Tompkins Avenue to what is now Stuyvesant Place and known as the Dawson property. At the time, he owned a field now occupied in part by the Corn Exchange Bank building and the buildings facing the St. George ferry.

From January 1, 1846, to May, 1852, Mr. Wotherspoon kept a record of the weather, which through the courtesy of his grandchildren, the Wardlaw family, has been placed in my hands for perusal.

The record consists of a book with pages six and two-eighths by seven and five-eighths inches. The left hand page is divided into eleven columns, giving in order the day of the month, day of the week, direction of the wind, the lowest night record of the thermometer and day readings at 8 a. m., 2 p. m., 10 p. m., and the highest in the day. The remaining three columns are devoted to barometer records. The right hand page contains general remarks, and includes during the first year a statement of the number of eggs laid by his fowls. Of these remarks January 8, 1846, is a fair sample and reads as follows:

"Morning cloudy. Evening fine. Cloudy at 10 p. m. 2 eggs."

The weather as recorded in the remarks seems to have run on according to season with little change, as indeed we know it has done for a very long period of time, to which circumstance we no doubt owe our existence on the earth today.

In the following tables, drawn up from the record, we have

[1] Presented December 21, 1907.

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included the highest and lowest temperature mentioned, though the records are sometimes incomplete, the 2 p. m. observation and the highest for the day being omitted. This was the case in the summers of 1847, 1848, and in much of 1851. Then follow for each year a few general observations that have been culled from the "Remarks." Lastly we give the "Rules for Prognosticating the State of the Weather from the Barometer," which may or may not be a summary of the observations made by Mr. Wotherspoon.

It may be noted that he was impatient for the advent of spring, and generally considered the season quite backward; also that in the record of five winters he mentions zero weather on two occasions. Our recent winters of 1903–4 and 1904–5 were much colder than any he records. However it is very interesting to get this glimpse of the past conditions on Staten Island, as for instance of the record of some of our deep snows, and when the first peach blossoms appeared in 1846.

The following are the notes from the record:

1846

	Highest		Lowest
January 2, 31	54°	January 18, 20	10°
February 11	41°	February 27	4°
March 20	60°	March 1	15°
April 21	82°	April 4, 5, 14	30°
May 25, 26	84°	May 12	40°
June 5, 19	88°	June 23	50°
July 11	98°	July 15, 16	56°
August 6	92°	August 4	60°
September 5	90°	September 29	47°
October 9	84°	October 23	31°
November 4	64°	November 26, 27	22°
December 3	60°	December 15	18°

February 20. Snow all night with hail and sleet. Heavy gale. Snow fifteen inches on the level.

March 14. Thunder in the night. Thick fog with rain.

March 25. Thunder.

March 27. Thunder at 3 p. m.

April 16. Backward season. Scarcely any leaves.

April 21. Blue flags. Daffodils.

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April 22. Cherry blossoms open.

April 24. First peach blossoms open.

We find this note regarding the time table of the ferry at New Brighton:

To New York, 8, 11, 2, 5:20.

From New York, 9, 12, 3½.

November 29. Heavy rain, also thunder in the night. 3½ p. m. Heavy squall with hail, rain, snow, and thunder. Evening clear.

1847

	Highest		Lowest
January 1	58°	January 22	14°
February 3	50°	February 24	18°
March 25	56°	March 17	23°
April 22	77°	April 1	26°
May 29	70°	May 1	44°
June 27	80°	June 15	54°
July 7	80°	July 1	64°
August 13, 14	80°	August 19, 20, 24	63°
September 5	81°	September 16	45°
October 5	70°	October 27, 28, 29	29°
November 4, 9	74°	November 30	11°
December 11	68°	December 27	13°

[Note: The January, February, March, April, and part of May records were made at 81 Warren Street, the others at New Brighton, as formerly.]

January 5. Heavy rains in the night, concluding with a thunder squall.

April 28. Very backward season. Cherries and peaches beginning to blossom.

1848

	Highest		Lowest
January 1	56°	January 11	4°
February 21, 23	57°	February 11	10°
March 31	69°	March 16	11°
April 22	75°	April 20	33°
May 21	76°	May 1	44°
June 16	92°	June 1	44°
July 25	86°	July 17	57°
August 5	84°	August 23	58°
September 2	82°	September 23	39°

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October 5	80°	October 9, 10, 11, 27	40°
November 5	58°	November 11	24°
December 19	62°	December 23, 24	18°

April 15. First apricot blossoms in the orchard.

April 17. Cherry in full bloom. (Stapleton.)

April 21. Peaches at home in full blossom.

May 20. Mosquito plague began the 19th inst. and continued three days. [This followed a period of warm weather.]

September 8. 11 p. m. Earthquake.

October 30. Heavy fog; last boat omitted on both sides [east and north shore of the Island.]

December 13. Picked ten roses in Mr. Fiedler's garden.

1849

	Highest		Lowest
January 26	56°	January 11	0°
February 11	40°	February 16, 19	6°
March 31	64°	March 4	22°
April 3, 8, 12, 26, 27	62°	April 16	28°
May 21, 23	84°	May 6, 7	40°
June 23	96°	June 11, 12	52°
July 13	96°	July 30	52°
August 25	90°	August 1	59°
September 17	83°	September 9, 25	50°
October 17, 22, 25	68°	October 31	36°
November 4	66°	November 29	28°
December 20, 22	48°	December 26	7°

January 20. Much floating ice for last fortnight.

March 18. Aurora.

April 20. A few peach blossoms, the first on young tree.

April 24. First peach blossoms at the house.

May 2. Late season; peach blossoms fully open.

1850

	Highest		Lowest
January 27	53°	January 1	13°
February 27	57°	February 5	11°
March 14	64°	March 4	16°
April 29, 30	68°	April 18	28°
May 13, 17	76°	May 12, 21	40°
June 19	90°	June 1	47°

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July 30	93°	July 11	60°
August 6	83°	August 17, 19	58°
September 1, 2, 6	80°	September 30	45°
October 17	72°	October 30	34°
November 27	64°	November 22	27°
December 22	56°	December 24	13°

February 14. Clear; heat lightning in the evening.

April 6. Heavy fall of snow in the night with N. E. gale.

April 13. Snow and rain.

April 20. Apricot tree at home in full bloom.

April 21. Backward season; no leaves yet. Lilac leaf buds partly open.

April 25. No leaves yet, no peach blossoms.

April 26. Thick fog. Huguenot ran into a brig. Red Jacket ran ashore Governors Island.

April 27. Leaves just coming out on lilac.

April 30. Peach blossoms out. First leaves on horse chestnut.

May 2. Peach trees in full bloom. Cherries just opening.

May 5. Cherries in full bloom.

1851

	Highest		Lowest
January 16	54°	January 31	6°
February 15	58°	February 1	10°
March 31	73°	March 1	27°
April 23	71°	April 12, 14, 20	34°
May 23	74°	May 6	41°
June 27, 29	76°	June 17	50°
July 17	81°	July 5, 31	61°
August 13	78°	August 29	58°
September 11	80°	September 25	45°
October 13	68°	October 28	37°
November 21	54°	November 12	27°
December 31	54°	December 27	1°

February 9. A freezing fog.

February 18. Brilliant aurora.

April 1. Forward season. Leaves on lilac.

April 5. Early season. Apricots in full bloom. Leaves all out on the lilacs.

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April 7. Apricot blossoms open at home.

April 12. Peach blossoms opening in the field.

April 27. First asparagus.

April 28. Pear tree in full blossom at home.

September 29. Splendid Aurora 10 p. m.

October 20. Fine weather and fresh breeze. Aurora.

December 27. Immense quantities of ice in the bay for a week past. Huguenot's last trip 3½ p. m. from City.

December 29. Great thaw yesterday and continues.

1852

	Highest		Lowest
January 1	46°	January 20	0°
February 11	54°	February 20	12°
March 9	64°	March 3	17°
April 16	60°	April 4	30°

January 19. Immense quantities of drift ice continues to make its appearance in the bay, interrupting nagivation, and latterly large cakes of field ice threatening to close the bay entirely. Snow 12 inches and upwards in depth.

January 20. Heavy ice in the bay. Sylph landed her passengers on the eight o'clock trip at Jersey City. Thousands crossed to and from Brooklyn on the ice.

[A further note at the end of January.] Much ice in the bay since the middle of December. No boat from New Brighton for nearly a week, say from Wednesday 21 to Wednesday 28 of January.

February 1. Bay covered with ice.

February 11. Thunder at 7 a. m.

April 18. Very backward season, neither leaves nor blossoms yet open even on lilacs and apricots.

April 23. Still no leaves or blossoms, except one or two on the nectarine (wall).

April 30. Leaves and blossoms not yet out except apricots and nectarines.

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RULES FOR PROGNOSTICATING THE STATE OF THE WEATHER FROM THE BAROMETER

1. After a continuance of dry weather, if the barometer begins to fall slowly and steadily, rain will certainly ensue, but if the fine weather has been of long duration, the mercury may fall for two or three days before any perceptible change takes place, and the longer time elapses before the rain comes the longer the wet weather is likely to last.

2. Conversely, if after a great deal of wet weather with the barometer below its mean height, the mercury begins to rise steadily and slowly, fine weather will come, though two or three wet days may first elapse, and the fine weather will be more permanent in proportion to the length of time that passes before the perceptible change takes place.

3. On either of the foregoing suppositions, if the change immediately ensues on the motion of the mercury, the change will be permanent.

4. If the barometer rise slowly and steadily for two days together or more, fine weather will come though for those two days it may rain incessantly, and the reverse; but if the barometer rise for two days or more during rain, and then on the appearance of fine weather begins to fall again, that fine weather will be very transient, and vice versa.

5. A sudden fall of the barometer in the spring or autumn indicates wind, in the summer during very hot weather, a thunderstorm may be expected; in winter, a sudden fall after frost of some continuance indicates a change of wind, with thaw and rain; but in a continued frost a rise of the mercury indicates approaching snow.

6. No rapid fluctuations of the barometer are to be interpreted as indicating either dry or wet weather of any continuance; it is only the slow, steady, and continued rise or fall that is to be attended to in this respect.

7. A rise of the mercury late in the autumn after a long continuance of wet and windy weather, generally indicates a change of wind to the northern quarter and the approach of frost.

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Lawrence's and Brewster's Warblers[1]

By James Chapin

Lawrence's and Brewster's warblers are two ornithological puzzles, usually considered hybrids between the blue-winged and the golden-winged warblers, but their exact relations are still in some doubt. It has been suggested that Brewster's warbler may be only a color phase of the blue-wing, but this is not very likely. Indeed it is more probable that the case would be better explained by the theory of Mendelism.

Typical *Helminthophila "lawrencei"* has the yellow body color of *H. pinus,* with the black throat and cheek patches of *H. chrysoptera,* while the general color of *H. "leucobronchialis"* is gray, somewhat lighter than the *H. chrysoptera,* whose black markings about the head it lacks. Besides these typical forms, however, a number of intermediates have been found, the most common of which is a sort of Brewster's warbler with a yellow tinge on the breast.

Brewster's warbler is, in fact, much commoner than Lawrence's, and has been found breeding a number of times, usually with the blue-wing, in Massachusetts, Connecticut, and eastern New York. The nesting of Lawrence's warbler has been watched but once, in Bronx Park, where a male Lawrence's warbler was mated with a female blue-wing.

During the past year I have collected a typical male Lawrence's warbler on Staten Island, and a typical Brewster's warbler (female) in New Jersey. On May 11, 1907, I discovered the Lawrence's warbler in a field near St. Andrew's Church, at Richmond, Staten Island. It had a perfectly black throat, and the white wing-bars of the blue-winged warbler.

On July 14, 1907, at Buckabear Pond, Passaic County, N. J., while I was looking for the female of a hooded warbler, my

[1] Presented December 21, 1907.

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squeaking attracted a female Brewster's warbler. It appeared to be anxious, as though bothered with family cares, but subsequent dissection showed little enlargement of the ovary. The bird has no yellow breast, and possesses the yellow wing-bars of the golden-winged warbler.

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The Marble House[1]

By Edward C. Delavan, Jr.

The destruction of the Hotel Castleton by fire, on the evening of November 12, 1907, led to the discovery, in the foundation, of numerous blocks of dolomite, which had been so utilized after St. Marks Hotel was demolished, about the year 1889.

St. Marks Hotel may be remembered as a square stone building with a later frame addition extending toward the south. This square stone building was formerly known as the Marble House, or as the Mansion House of Mrs. Arietta Thompson. The stone used in its construction, as the writer was informed by the late Mrs. Hannah E. Westervelt, a sister of Mrs. Thompson, was brought from the Kingsbridge quarry.

The Marble House was built for Mrs. Arietta Thompson, wife of Gilbert Livingston Thompson and daughter of Daniel D. Tompkins, and its construction was commenced probably prior to 1821. The great brownstone gate posts, two of which remain in their original location,[2] and the wall between them, along the northeasterly side of St. Marks Place, are probably of a date later than 1835.

This venerable building was so closely associated with the history of New Brighton, that the writer may be pardoned if he goes with some degree of detail into the events which preceded and led up to its construction.

As early as the year 1623 the locality now called Tompkinsville was known as "the watering place" (14 Col. Doc. 506). Here outward bound vessels stopped to fill their casks from the brook, which flowing from the thickly wooded hills and fed by constant springs, afforded a copious supply of cold pure water. With the progress of settlement cultivated fields began to dot

[1] Presented January 18, 1908.

[2] These two gate posts have since been removed.

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the landscape, but axe and plow had made little inroad upon the hillsides when the British fleet entered the harbor in the summer of 1776.

The watering place lay in a tract devised in 1718 by Ellis Duxbury to the Minister Church Wardens and Vestry of St. Andrew in the County of Richmond, and later known as Duxbury Glebe. In 1765 the Church leased the glebe to Dr. John Bard of New York City for a term of fifty-four years. (D Deeds 609.)

To the west along the Kill Van Kull, the Dorland Patent lay, and it is known to have been in the possession of Solomon Comes about the year 1748 (106 N. Y. 1, 21), but his fate and the disposition made by him of his property remain undiscovered by the writer.

In 1769 John Wandell owned a five acre tract bounded on the west by the Jersey Street brook, which in later years became known as the distillery lot; also an adjoining strip thirty-five paces wide, on the opposite side of the brook, which is referred to in the mortgage made by him as the lot "whereon stands a certain bark mill and tan pits." (B Mgs. 16.) It is said that the remains of old vats have been discovered on the north side of Richmond Terrace, east of Jersey Street; Mr. John Seaton and the late Silas N. Havens having informed the writer that they had seen these uncovered when excavations were made for the buildings erected by Edward Reilly soon after the year 1869, but it is uncertain whether these were used for the purposes of a distillery, or for the earlier tannery.

The Philip Welles Patent had been partitioned by the Van Tuyl family into three longitudinal strips, of which the easternmost was purchased in 1775 by John Amerman; the middle strip was owned by Wilhelmus Vreeland, while the westernmost part had come into the possession of Hendrick Van Tuyl and Cornelius Vanderbilt. (B Mgs. 235; D Deeds 315; D Deeds 450.) The farm adjoining the Glebe on the south, fronting the bay, had been devised in 1734 by the Rev. David De Bonrepos, minister to the French congregation, to David, son of Alexander De Bonrepos

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of New York. The writer has so far failed to discover what became of David the devisee. (12 Wills 175, N. Y.) This land probably came into the possession of the Corsen family prior to the Revolution. The northern twenty acres were in possession of Derby Doyle, the ferryman, in 1770. (B Mgs. 43.)

South of the DeBonrepos farm the McLean family seemed to have occupied the land nearly if not quite down to St. Mary's Church in Clifton. (C Deeds 54.)

The invading forces disembarked on Staten Island. The territory surrounding the watering place became a great camp. (5 Harper's Enc. of U. S. Hist. 471.) Fences and standing timber were converted into firewood and building material, until bald hills surmounted by redoubts and rolling commons bare of grass alone remained. (1 Morris, 313, 314, 315.)

The close of the revolution found the two farms on the south and west in the possession of Gozen Ryerss, who was county judge from 1797 to 1802 and who sold the former, being the Derby Doyle parcel, to Abraham Van Duzer, and the latter (or all but six acres of the Dorland Patent), to Cornelius Van Buskirk. (E Deeds 367; 328.)

Under the authority of Chapter 19 of the Laws of 1799, thirty acres of land at the watering place were taken in the following year by the State of New York, in the exercise of the right of eminent domain, for the purpose of a marine hospital, and of this tract five acres were subsequently conveyed to the United States. These parcels became known as the Quarantine Ground and the United States Ground, respectively. (Map No. 1; G Deeds 379.)

At about this time Aaron Burr, actively engaged in consolidating the Bucktails of New York into the effective, if undesirable political force since known as Tammany Hall, and in ending the regime of the old landed aristocracy represented by the Clintons, found an able and ambitious lieutenant in Daniel D. Tompkins, upon whom Burr's mantle fell when he left New York after the duel with Alexander Hamilton in 1804. A judge at thirty years of age, sharing the bench with the learned James Kent, and elected governor of the State of New York in 1807, the rise of Daniel D. Tompkins was no less rapid than brilliant.

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It was in the year 1807 that the Clermont made her successful trip to Albany at the rate of nearly five miles an hour. The legislature confirmed a grant to Livingston and Fulton of the monopoly of navigation in the waters of the State of New York by steam-propelled vessels. It was believed that transportation was revolutionized, and that thereafter the steamboat would afford a cheaper and more comfortable means of conveyance than the stage. The development of the railroad was not foreseen.

The war of 1812 necessitated the strengthening of the defences of New York. Some of the old revolutionary redoubts were restored and new forts were erected on Staten Island, under the personal supervision of Governor Tompkins.

Attracted by the beauty of the landscape and convinced of the accessibility of the north and east shores of Staten Island from New York by the new means of transit, Governor Tompkins in 1814 bought the Van Buskirk farm, the farm which had been conveyed by Amerman's heirs to Abraham Crocheron, and part of the Vreeland farm. (G Deeds 393, 382.)

In the same year a law was passed permitting St. Andrew's to sell the Glebe, the act reciting "that the reason of the distant situation of the said glebe from the church, it is not convenient to the minister and incumbent of said church, to occupy and improve the same himself, by reason whereof the said glebe hath got out of repair, and the wood and timber thereof has been carried off or destroyed, in consequence of which the same cannot be leased to great advantage * * *." (Chapter 15 Laws of 1814.)

Pursuant to this act the Church in 1815 conveyed to Daniel D. Tompkins all of the Glebe now lying north of the Richmond Turnpike (G Deeds 443), and a large portion of that lying south of the Turnpike. (G Deeds 396; see H Deeds 64.)

On the high hill near the middle of the Van Buskirk farm stood the redoubt which, as I have been informed by Edward C. Bridgeman, Esq., son-in-law of the late Daniel Low, a former owner of part of the property, bore the name of Fort Knyphausen. In relation to this it is important to notice that the spring in the valley below is still called the Hessian Spring. Governor Tomp-

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kins chose a point just southeast of this fort as the site of the mansion which he erected, and in which he resided up to the time of his death. His house was owned and occupied for many years by the late Dr. John S. Westervelt, and was destroyed by fire in the year 1874. It stood slightly southwest of the present home of Mrs. L. Benziger on Fort Street, better known as Fort Place. The location of the old building is indicated on Plate 4, Beer's Atlas of Staten Island.

The year 1816 was marked by many important events in the History of Staten Island. On March 31, the legislature of the State of New York incorporated the "Richmond Turnpike Company", by which company the road still known as the Richmond Turnpike was laid out and opened from Arrietta Street to the new Blazing Star ferry, its purpose being to shorten the stage route between New York and Philadelphia.

On September 14, Daniel D. Tompkins acquired an interest in the steamboat monopoly of Livingston and Fulton. (Gibbons *vs.* Ogden 17 Johnson 488, 491.) In October the small tract lying in the south glebe, and bounded northerly by Arrietta Street and Richmond Turnpike, west by Sarah Ann Street, south by Van Duzer's land, and east by the Bay of New York, was divided into lots upon a map made by Uzal W. Freeman (Map No. 2). The location of Nautilus Hall is indicated on this map, and it was probably erected about this time; a triangle is also shown on which there was later erected the brick edifice of the Dutch Reformed Church which was recently torn down. Among the first grantees of the lots laid down on this map we find the names of De Forest, Murray, Van Duzer, Standerwick, Van Clief, Harcourt, Perine, Martino, Jarvis, Burger, Eddy, Guyon, Lockman, Van Beuren, and "John Gough of Albany, steward of the steamboat Richmond". (H Deeds 267.) In November Daniel D. Tompkins was elected vice president of the United States under James Monroe.

The steam ferry boat Nautilus, owned in whole or in part by Daniel D. Tompkins (Clute, 318), is said to have begun her service between Staten Island and Whitehall wharf in New York on November 29, 1817. (2 Morris 264.)

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"The North Village of Tompkinsville" was laid out upon a map made by John T. Ludlam in 1819, on which map the Quarantine Ground is shown as bounded on the north by Fountain Street, probably as that street was laid out and opened under an act of the legislature of the preceding year. This street was named in honor of Garret Fountain, who had bought a piece of land bounded thereon. Its eastern end is now known as South Street. The tract so laid out on the map of 1819 was bounded on the west by Tompkins Street, and therefore lay entirely in the north glebe.

In the north section of this map we find a plot of some six or seven acres bounded north by Livingston Street, south by Thompson Street, west by Tompkins street, and easterly by the Bay of New York. This was the site of the Marble House.

In 1820 Daniel D. Tompkins was reëlected vice president of the United States.

A new map was made by John T. Ludlam in February, 1821, upon which a building is indicated as standing on the site mentioned, from which it may be inferred that the Marble House was certainly contemplated, probably commenced and possibly completed prior to that time.

Mr. Tompkins had signed and acknowledged a deed conveying the site in question to his daughter Mrs. Thompson, but, probably owing to financial embarrassments, this deed was never delivered. (Thompson *v.* Hammond, 1 Edwards Ch. 497.) During the year 1821 many judgments were entered against him, including one in favor of his father-in-law, Mangle Minthorne, for over $25,000. In 1822 Mr. Tompkins made an assignment for the benefit of the creditors. (159 Deeds 8, N. Y.) In 1823 St. Andrew's Church foreclosed the mortgage given by Mr. Tompkins covering the north glebe, and on the foreclosure sale the property was bought in by the Church. (K Deeds, 124.)

In February 1824 the Supreme Court of the United States declared the laws of the State of New York creating a steamboat monopoly to be unconstitutional. (Gibbons *v.* Ogden, 9 Wheaton 1.)

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Mangle Minthorne died on April 20, 1824. In the following June St. Andrew's Church reconveyed the north glebe to Daniel D. Tompkins (K Deeds 383), who soon thereafter refunded to Gilbert Livingston Thompson the sum of $2,500, which Mangle Minthorne had advanced to Arietta M. Thompson, and which had been used in the construction of the Marble House. (Thompson *v.* Hammond.)

Gilbert L. Thompson claimed from Daniel D. Tompkins the sum of $16,539.92 "due for the costs and expenses and amount actually paid advanced and expended by him the said Gilbert L. Thompson, on which the said Gilbert L. Thompson had become legally liable and about the erecting building and improving a certain house, outhouses and premises thereunto belonging and situated near the Quarantine Ground of the County of Richmond."

Daniel D. Tompkins claimed that the said Gilbert L. Thompson was indebted to him for money paid, laid out and advanced and expended by him to and for Gilbert L. Thompson, or for his use or for the value or amount of property goods and chattels belonging to him, the said Daniel D. Tompkins, and by him delivered to the said Gilbert L. Thompson and not by him returned.

These conflicting claims were submitted by the parties for arbitration and the arbitrator awarded to Gilbert L. Thompson the full amount of the claim, $16,539.92, on March 16, 1825.

Daniel D. Tompkins in the following June brought suit against Gilbert L. Thompson, and obtained an injunction, but died three days later. (3 Chancery Clerks Register 95, N. Y.)

The following notice is copied from the Evening Post of Monday, June 13, 1825.

DIED

At his residence on Staten Island, Saturday evening last after a long and painful illness, Daniel D. Tompkins Esq., late Vice President of the United States, in the 51st year of his age.

The senate of the State of New York, the corporation of the City, the judges of the different courts, the members of the New York Bar, the officers of the grand lodge, and his friends and acquaintances, are respectively invited to attend the funeral this afternoon at five o'clock, from the steamboat wharf at Whitehall. Carriages will be in waiting on the arrival of the steamboat Nautilus from Staten Island.

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Mr. Tompkins left surviving him his widow Hannah, and the following named persons as his only named heirs at law:

1. Griffen Tompkins.
2. Arietta Minthorne, wife of Gilbert L. Thompson.
3. Hannah E., wife of Dr. John S. Westervelt.
4. Sarah A., who married Archibald Gordon.
5. Minthorne Tompkins.
6. Daniel H. Tompkins.
7. Susannah M., who married Richard Smith.
8. Ray Tompkins.

Upon the award of the arbitrator before mentioned, Gilbert L. Thompson obtained judgment against the administrators of the estate of Daniel D. Tompkins on March 15, 1828, for $16,539.92 debt and $3,250 damages and costs. (N. Y. County Clerks Judgment Docket.)

The judgment obtained by Mangle Minthorne was, at the instance of the executors of his will, received by scire facias on the 12th day of August, 1829, against the heirs and terre-tenants of Daniel D. Tompkins, and a writ of testatum fieri facias, dated the 15th of the same month, was directed to the sheriff of Richmond County, commanding him to sell all the north glebe, except a few small parcels sold by Mr. Tompkins. The sale under this execution was from time to time adjourned, until Gilbert L. Thompson procured an injunction restraining the sheriff from selling the site of the Marble House. On Jan. 4, 1830, the sheriff sold the land described in the execution, except the said site, to Charles C. Young. Stephen Cleveland, as the assignee of a junior judgment, redeemed the land so sold and received from the sheriff a deed bearing date April 5, 1831 (T Deeds, 182; V Deeds, 482), which however, expressly excepted the site covered by the injunction, by the following description, namely:

"All that certain piece or parcel of land with the building thereon, now occupied and claimed by Gilbert Livingston Thompson, which piece or parcel or land is bounded on the north by Livingston Street as laid down on the map of the lands of the late Daniel D. Tompkins known as the boundary lines between

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the lands of Philip Van Buskirk and the glebe of St. Andrew's Church, on the south by Thompson Street as laid down on the same map, and on the east by the Bay of New York, containing seven acres, be the same more or less (the said grantee alleging that the said property excepted as claimed by Gilbert Livingston Thompson should have been described as claimed by Mrs. Gilbert Livingston Thompson)."

The injunction so obtained by Gilbert Livingston Thompson was subsequently dissolved, and the sheriff accordingly and on the thirtieth day of September, 1833, sold the site of the Marble House under the same execution to Minthorne Tompkins and Daniel H. Tompkins and delivered to them his certificate of sale. This certificate was, on the 21st day of October, 1834, assigned to Thomas E. Davis. (Y Deeds, 212.)

But as we have seen, Gilbert L. Thompson had recovered judgment in 1828 for over $16,500 against the administrators of the estate of Daniel D. Thompkins. In April, 1829, he and Stephen Cleveland were appointed trustees of Mrs. Thompson's separate estate, and the aforesaid judgment was assigned to Stephen Cleveland. In July, 1829, Mr. Tompkins' assignees conveyed to Cleveland all the real estate in Richmond County assigned to them by Daniel D. Tompkins, Cleveland admitting his trusteeship for Mrs. Thompson and the assignees agreeing to credit $2,500 on the said judgment. In September, 1835, Mrs. Thompson and her trustees conveyed the site of the Marble House to Thomas E. Davis. (Y Deeds, 212.)

A confirmatory deed had been made under the direction of the Court of Chancery by St. Andrew's Church to Mrs. Thompson's trustee, in which the antecedent proceedings were set forth with great particularity. (Y Deeds, 498.)

It may be observed that the great brown gate posts and the wall between them, stand upon the present curved line of St. Marks Place, and not upon the old straight line of Tompkins Street as laid down on the map of 1819. It may be inferred from this that they were built at a considerably later period than the house, probably after the map of the New Brighton Association was made in 1835.

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From Thomas E. Davis title to the property passed to the short-lived New Brighton Association and back through foreclosure to Davis, who conveyed it to Samuel M. Fox. Subsequent owners were Theodosius O. Fowler, Victor Y. Fourgeaud and August Belmont, the latter of whom conveyed it to Cornelius Vanderbilt. It then passed into the hands of a syndicate, and was later successively sold to Frederick E. Gibert, Frederick Lachmeyer, and George C. Tallman, and passed to the latter's legal representatives on his death. The Marble House was demolished about the year 1889, in order to make room for the Hotel Castleton.

LIST OF MAPS.

1. Map of the Quarantine Ground 1799, Map No. 1. Richmond County Clerk's office.

2. "Map of a Parcel of Ground, the Property of His Exc'y Daniel D. Tompkins situated adjacent to the Quarantine Ground on Staten Island, surveyed and made October, 1816, by Uzal W. Freeman, City Surveyor." Map No. 2 (copy) R. C. C. office.

3. "Map of property situated at Staten Island, belonging to Daniel D. Tompkins, July 16, 1819. Surveyed by John T. Ludlam." In the possession of the City of New York, and filed in the Richmond Borough Hall.

4. "Map of property situated at Staten Island adjoining the Quarantine belonging to Daniel D. Tompkins, New York, February 27, 1821. Surveyed by John T. Ludlam." In the possession of Mr. Edward Wanty, St. Pauls Ave., Tompkinsville, S. I.

5. Map made under the direction of the Master in Chancery in Lake *vs.* Tompkins and U. S. Bank *vs.* Tompkins and Van Buskirk *vs.* Tompkins, 1823, by E. W. Bridges. K deeds 127, 429. Not found.

6. Map of land heretofore belonging to Daniel D. Tompkins by Edward Doughty, 1829. Y deeds 212. Not found.

7. Map signed by Thomas Lawrence, George Howard, J. S. Harrison and James Guyon. Y deeds 212. Not found.

8. "Map of Grounds situated at Tompkinsville, Staten Island, the property of Caleb T. Ward, showing the adjoining lands be-

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longing to The Heirs of Daniel D. Tompkins and others, New York, February 22, 1829. Compiled from various surveys by E. W. Bridges, C. Surveyor." In the possession of Mr. Wanty. With another detailed map of a smaller part of the above, of same date, marked "A."

9. Map of property of Arietta M. Thompson, by John J. Soulé, April 26, 1834. X deeds 1. Y deeds 212. Not found.

10. "Staten Island Map of New Brighton Property, belonging to the New Brighton Association in the town of Castleton, County of Richmond, State of New York. Drawn and surveyed by J. Lyons, 1835." Map No. 12, in the Richmond County Clerk's Office.

11. "New Brighton Atlas, by J. Lyons, City Surveyor," 1835. In the possession of the Title Insurance Company of New York.

12. "Map of Edgewater and part of New Brighton, Staten Island, New York, showing old farm lines, Streets, Avenues, and lots, etc., from actual surveys from George M. Root, August, 1866." Map No. 1000 in the Richmond County Clerk's Office.

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Chemical Analysis of Cretaceous Amber from Kreischerville [1]

By Arthur Hollick

Specimens of amber from the Androvette pit at Kreischerville were subjected to chemical analysis by Dr. William J. Gies of Columbia University, at my request, and he reports that the material is typical amber or succinite, so far as chemical composition is concerned. Amber oil, containing succinic acid, was obtained by destructive distillation, and a number of determinations of elementary composition yielded the following data:

Carbon	77.87
Oxygen	12.57
Hydrogen	9.11
Sulphur	0.35
Ash	0.10
	100.00
Volatile matter at 100° C.	0.40

(Nitrogen and phosphorus absent.)

which agrees with the data relating to succinite as determined by various observers.

[1] Presented January 18, 1908.

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Peculiar Action of Lightning on a Maple Tree[1]

By Howard H. Cleaves

During an electrical storm which occurred during either the latter part of July or the early part of August, 1907, a maple tree in the woods at Princes Bay was struck by lightning and destroyed in a most peculiar manner. The tree stood in the midst of the woods, and there appeared to be no reason why any one of the numerous neighboring trees should not have been the unfortunate one.

At a point some fifteen or twenty feet from the ground on the trunk the bark had been torn off in a strip about ten inches wide, and a few feet below this point, clear to the ground and even out on the exposed roots, there was scarcely a remnant of bark to be found. Above the point where this bark-peeling was started not a trace of injury could be discovered, except a few broken limbs caused by the fall of the tree.

The main force of the bolt seems to have been spent on the trunk of the tree, at a point about seven feet from the ground. At this place, and for some distance above and below, the trunk was badly splintered and torn apart. A considerable amount of energy must still have remained, however, for the base of the tree had been raised several inches from the ground, and the earth for a short distance on all sides had been greatly disturbed and plowed into. The ground for a radius of at least four feet had been almost completely bared of vegetation, and pieces of the bark torn from the trunk were found at a distance of some fifteen yards.

After examination by several persons it was declared that no trace of fire anywhere on the trunk could be discovered, with the possible exception of a little strip of wood about six inches long at the very heart of the trunk, which appeared to be somewhat

[1] Presented January 18, 1908.

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blackened. It was decided, however, that this was not caused by the lightning. It appeared more like a slight natural defect at the core, and was possibly caused by the exposure of the inner wood to the atmosphere, many days having elapsed between the destruction of the tree and the date when these notes were taken.

The space that had been formerly occupied by the unfortunate tree formed an open shaft to the sky. The leaves of the adjoining trees, which formed the walls of this shaft, were dead and withered. They displayed a complete fringe of blackened and curled-up foliage. The fact that these leaves were burned in this way, in the face of the apparent entire absence of all traces of fire on the tree which was struck, is rather remarkable.

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Literature Relating to Staten Island

Hough's Handbook of Trees[1]

Two hundred and eight trees are described, with the accompanying illustrations of trunk, twigs, leaves, and fruit. The leaves and fruits are photographed against a measured background, which makes it possible to ascertain the natural size at a glance. On the tree trunks a one foot rule is displayed, so that the size is apparent there also. Other features are illustrations of leafless twigs, made from photographs taken in winter, showing the character of the bark, and photomicrographs of a transverse section of the wood in each genus, which makes comparison very interesting. Accompanying the description of each tree there is a small outline map of the area covered, the dotted portion showing the distribution of the species as far as known. The text is not given over wholly to technical description, for there may be found many sidelights of comment, and the illustrations also often include some pleasing detail that is additional to the mere matter in hand.

Of local interest are the illustrations of the following trees, the photographs for which were taken on Staten Island:

Pignut Hickory	*Hicoria glabra* (Mill.) Britt.
Small-fruited Hickory ...	*Hicoria microcarpa* (Mill.) Britt.
Black Alder	*Alnus glutinosa* (L.) Gaertn.
Blackjack Oak	*Quercus marilandica* Muench.
White Mulberry.....	*Morus alba* L.
Osage Orange	*Toxylon pomiferum* Raf.
Tulip Tree	*Liriodendron tulipifera* L.
Sweet Cherry	*Prunus avium* L.

[1] Handbook of the Trees of the Northern States and Canada, East of the Rocky Mountains. Photo-descriptive. By Romeyn Beck Hough, B.A. 8vo, pp. 470. Illustrated with 498 figures and many outline maps. Published by the author at Lowville, N. Y., 1907.

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Clammy Locust.....	*Robinia viscosa* Vent.
Dwarf Sumach	*Rhus copallina* L.
Poison Sumach	*Rhus vernix* L.
Red Maple	*Acer rubrum* L.
Horse Chestnut	*Æsculus hippocastanum* L.
Hercules' Club	*Aralia spinosa* L.
Flowering Dogwood	*Cornus florida* L.
Red Ash	*Fraxinus pennsylvanica* Marsh.
Black Haw	*Viburnum prunifolium* L.

W. T. D.

SMITH'S NEW JERSEY ENTOMOLOGICAL REPORT FOR 1906[1]

In this report Dr. Smith devotes two pages to the consideration of the mosquito problem on Staten Island, giving a short history of the general plan of ditching the salt meadows under the direction of Dr. Alvah H. Doty, as well as the treatment of the inland pools infested by entirely different kinds of mosquitoes. Attention is called to the now well known fact that since this work has been undertaken, both on Staten Island and in neighboring parts of New Jersey, the mosquitoes have become much less numerous, to the great benefit of the people. The fact that we owe this benefit chiefly to the example and enterprise of Dr. Smith in his treatment of the New Jersey marshes, should not be lost sight of.

W. T. D.

WHEAT'S LIST OF LONG ISLAND SHELLS[2]

Although the title of this article is restricted in its scope to Long Island the opening paragraph contains the statement that "Staten Island is included in the area examined." The only species definitely mentioned, however, as coming from this locality is *Strobilops labyrinthica* Say, which is in our local list

[1] Report of the Entomological Department of the New Jersey Agricultural College Experiment Station, New Brunswick, N. J., for the year 1906, by John B. Smith, Sc.D.

[2] List of Long Island Shells. By S. C. Wheat. *Bull. Brooklyn Conchological Club*, 1: 7–10. 1907.

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under the generic name *Strobila* ("Catalogue of the Mollusca of Staten Island." Sanderson Smith. *Proc. Nat. Sci. Assn. S. I.* 1: 50. Mar. 1887. Extra No. 5).

A comparison of these two lists alone indicates that while Long Island possesses a larger number of marine forms, as might be expected from its more extensive coast line, Staten Island is richer by five species in freshwater and terrestrial forms, which is somewhat surprising in view of our more limited area and fewer ponds and streams. This comparison, however, does not set forth the full extent of this interesting fact, inasmuch as four other species from our island, included in the "Catalogue of the Binney and Bland Collection, etc." (*Bull. Am. Mus. Nat. Hist.* 14: 335–403. 1901. Reviewed in *Proc. Nat. Sci. Assn. S. I.* 9: 7, 8. 1904) are not included in this list. Mr. William T. Davis has reported also the local occurrence of *Ancylus rivularis* Say (*Proc. Nat. Sci. Assn. S. I.* 5: 19. 1896) which is not listed by Mr. Wheat. The most reasonable explanation of this phenomenon would appear to be, not that Long Island is lacking in these forms, but that we have been able to search our smaller island more thoroughly.

A. H.

THE MUSEUM AND LIBRARY OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES [1]

A brief announcement of the transfer of the Museum and Library of the Association from the Staten Island Academy and its installation in the Borough Hall, followed by a general account of the botanical material in the museum and a list of the most important complete scientific serial publications in the library.

CAPTURE OF LAWRENCE'S WARBLER ON STATEN ISLAND [2]

An account of the capture of a specimen of this bird near Richmond on May 11, 1907.

[1] By Charles Louis Pollard in *Torreya*, 7: 162–164. August 1907.
[2] By James Chapin. *Auk* 24: 343. 1907.

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Records of Meetings

Regular Meeting, October 19, 1907

The meeting was held at the residence of Mr. Howard R. Bayne, New Brighton.

President Howard R. Bayne in the chair.

Thirty-five members and guests were present.

The minutes of the annual meeting of May 18, 1908, were read and approved.

The following were elected to active membership: Eugene D. Alexander, Moses Altman, Edward B. Arnold, Edwin Atwell, Lloyd M. Bayne, Adelrich Benziger, Bruno Benziger, Eugene Bernheimer, William W. Bryan, Leonard J. Busby, R. Ward Carroll, Edward D. Clark, Henry G. Clement, Daniel A. Cobb, Jr., Edgar D. Coonley, David H. Cortelyou, Fred H. Cozzens, Julius Culmann, Philip R. Dean, Melvin L. Decker, Gabriel P. Dissosway, Arthur E. Dowler, A. Lincoln Eglinton, Samuel H. Evins, Edwin Flash, Jr., David H. Gildersleeve, Charles Goldberg, John D. Hage, Albert Handy, Vincent Hockmeyer, Anton W. Hoffmeyer, William H. Jackson, George K. Jenckes, T. Livingstone Kennedy, Charles Knight, C. M. Kopf, Edward M. Law, Jr., William F. Lee, James J. MacDonald, Charles A. Marshall, Charles W. McCutchen, Logan G. McPherson, William B. Moss, Fred E. Murphy, Orra E. Northrop, Edwin L. O'Bryan, Charles L. Pollard, Walter W. Price, Edward F. Raymond, Oswald D. Reich, Frank I. Rieff, Clarence I. Robinson, William A. Ross, Timothy F. Santry, Daniel Schnakenberg, H. Ernst Schnakenberg, William Seaton, Horatio J. Sharrett, William C. Smith, Robert H. Stevens, David J. Tysen, William S. Van Clief, George F. Van Dam, Rudolf van Hoevenberg, Harry G. Van Vechten, William T. Van Vredenburgh, James R. Walsh, Joseph W. Wanty, George P. Wort.

The committee on the annual prize competition for work in natural science, open only to pupils in Curtis High School, submitted the following

Report

The subject of competition for the school year 1906–7 was "A collection of not less than fifty native and introduced wild plants of Richmond County," under the conditions determined by the committee. These conditions may be found in the published proceedings of the meeting of May 19, 1906.

Five collections were submitted in competition, as follows:

	Total No. of Specimens	Correctly Identified	Wrongly Identified	Not Named
Harold Ludlow	75	70	4	1
Walter B. Reich	73	65	4	4
Manolo M. Wiechers ..	67	51	9	7
John Rabitte..... } Erik Jensen..... }	Collections not up to the requirements.			

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Harold Ludlow was determined to be the successful competitor and Walter B. Reich was recommended for honorable mention.

The subject and conditions determined upon for the year 1907–8 were as follows:

SUBJECT

A collection of not less than 100 specimens of Staten Island insects, including at least 50 species and 4 orders.

CONDITIONS

1. The specimens shall be mounted and displayed in boxes or cases[1] and grouped according to their natural orders.

2. Each specimen shall be labeled, the label to include the scientific name, the common name when any such is recognized, and the locality where the specimen was collected.

3. The specimens shall be collected between July 1, 1907, and June 1, 1908, and the collection shall be completed in all details and turned in to the principal of the school on or before June —, 1908.

ARTHUR HOLLICK
WM. T. DAVIS
HARRY F. TOWLE
Committee.

The President made formal announcement of the transfer of the museum and library of the Association to the room assigned by the city in the Borough Hall, and the employment of Mr. Charles Louis Pollard A.M. as curator; also that the Board of Estimate and Apportionment had approved an appropriation of $4,000 for the furnishing and equipment of the museum.

The President then introduced Mr. Pollard, who spoke briefly on the present condition of the collections and library and outlined the general plans suggested for their future care and arrangement.

Mr. William T. Davis and Dr. Arthur Hollick referred to the death, since the last meeting of the Association, of Mr. Samuel Henshaw, one of the organizers of the Natural Science Association of Staten Island. The following sketch of Mr. Henshaw's life was read by Dr. Hollick:

Mr. Samuel Henshaw, one of the fourteen organizers of the Natural Science Association of Staten Island, on November 12, 1881, was born in Manchester, England, and died on Staten Island, July 22, 1907, in his seventy-fourth year. He came to America in 1868 to take charge of the John C. Green estate at New Brighton, in which position he remained for twenty-one years. In 1890 he began independent work as a landscape gardener and laid out a number of large estates, including those of John Doane at Thompson, Connecticut, Wm. Rockefeller in Westchester County, New York, the grounds of Vassar College, Poughkeepsie, Columbia University, the parks for Wappingers Falls, New York, the grounds of Gilbert College and the Gilbert Home at Winsted, Connecticut, the estate of Mrs. Eldridge at Norfolk, Connecticut, the Rhinelander esate, the New York Botanical Garden, and many lesser undertakings. For many years he was an active member of the Association, having served for

[1] Any collection may be displayed in one large box or case or in several small boxes or cases.

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several years as treasurer, besides contributing many historical relics to our museum, and papers on botanical subjects to our PROCEEDINGS.

Appreciative articles in regard to his work as a landscape architect, gardener and horticulturist appeared in many journals, including *The Florists Exchange,* New York and Chicago, 24: 105 (July 27, 1907); *Horticulture,* Boston, 6: 121 (July 27, 1907, portrait); *Weekly Florists Review,* Chicago and New York, 20: 12–13 (July 25, 1907, portrait); *The American Florist,* Chicago and New York, 29: 61 (August 3, 1907, portrait); *Gardening,* Chicago, 15: 361 (August 15, 1907, portrait); and the *San Jose* (California) *Mercury* (July 30, 1907).

SCIENTIFIC PROGRAM

Mr. William T. Davis exhibited specimens of *Cicada septendecim* Linn., and a copy of the recently issued *Bulletin* No. 18, U. S. Dept. Agriculture, Div. Entomology, relating to the subject, and read a paper on "The Seventeen-Year Cicada on Staten Island in 1907." (Printed in full in this issue, p. 1.)

Mr. James Chapin exhibited skins of the barred owl and the red-shouldered hawk and read a paper on "Nests of the Barred Owl, Red-Shouldered Hawk, and Barn Owl on Staten Island." (Printed in full in this issue, p. 3.) Mr. Chapin also showed photographs, taken by Mr. Howard H. Cleaves, of young barn owls and red-shouldered hawks.

Dr. Arthur Hollick exhibited and described specimens of lignite and fossil plant remains from the Cretaceous clays at Kreischerville, recently collected, and stated that, in conjunction with Professor Edward C. Jeffrey of Harvard University, and with the aid of an appropriation of $300 from the U. S. Geological Survey, special excavations were being made and a large amount of interesting material was being collected.

Dr. Hollick introduced Professor Jeffrey, who made a few brief remarks supplementary to those of Dr. Hollick.

Mr. William T. Davis exhibited two living hog-nosed snakes or spreading adders, *Heterodon platyrhinus* Latreille, and stated that of the many he had seen from the island all had been of the spotted variety. One of the snakes shown was of a uniform dull lead color on the dorsal surface and without spots. It was collected at Yaphank, Long Island. The Staten Island specimen came from the farm of Mr. Isaac Wort at Woodrow, and on July 22, 1907, had laid 23 eggs, which were also shown. The serpent had always been of a cross disposition and inclined to hiss and flatten out, whereas the Long Island individual was of a milder temperament.

Mr. John Rader exhibited a number of specimens of recently collected Drift and serpentine rocks.

Mr. Alanson Skinner exhibited and commented on a series of photographs illustrating the personal characteristics, arts, and culture of certain British East African negroes. The photographs were taken by Mr. Herbert Lang, of the American Museum of Natural History, during the Tjadar Expedition, in 1906.

The meeting then adjourned.

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REGULAR MEETING, NOVEMBER 16, 1907

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

About eighty members and guests were present.

The minutes of the meeting of October 19, 1907, were read and approved.

The following were elected to active membership: Mrs. M. M. Adams, Isaac Almstaedt, Thomas Baker, Alfred J. Barrett, Edward L. Bogert, Horace I. Brightman, Miss Bertha G. Brooks, Robert P. G. Bucklin, Miss Georgine M. W. Caldwell, Mrs. Leopold A. Camacho, Hobart Clark, John J. Collins, Clinton G. Daniels, Dwight H. Day, Harry W. Doremus, J. Sterling Drake, Charles A. Drucklieb, James Feeny, Charles F. Hart, Albert B. Hodges, Thomas Kenny, Charles R. Kingsley, George M. Lawrence, Theodore R. J. Lins, Mrs. Edward A. Low, Joseph H. Maloy, Ralph McKee, Charles E. Nifenecker, Joseph F. O'Grady, Frank R. Page, A. D. Pentz, Esle F. Randolph, Morgan M. L. Ryan, James J. Santry, John Seaton, Cornelius Shea, Mrs. William Allaire Shortt, Mrs. Frank W. Skinner, Mrs. Samuel McK. Smith, Theodore H. Spratt, Arthur O. Townsend, Clarence D. Turney, David M. Van Name, Walker Washington, Mrs. Martha J. Wilkinson, Frederick B. Woodruff, Mrs. Jessie I. Yates.

The President announced the appointment of the following Women's Auxiliary Committee, to assist in adding to the membership of the Association among the women of the island and to have charge of any social functions in connection with the meetings of the Association: Mrs. Arthur Hollick, *chairman*, Mrs. Samuel McK. Smith, Mrs. T. Livingstone Kennedy, Mrs. Frank W. Skinner, Miss Georgine M. W. Caldwell.

The President introduced Mr. Frederic W. Lucas, who read a paper describing the work of the Brooklyn Institute of Arts and Sciences, especially of the means and methods employed to enlist the interest of children and to attract the attention of casual visitors to the museum.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited a series of geological specimens and read a paper on "Drift Bowlders from the Shore at Tottenville." (Printed in full in this issue, p. 9.)

Dr. Hollick also presented, on behalf of Mr. Murray Androvette, a vase-shaped sandy clay concretion, obtained from an excavation in the Cretaceous deposits at Kreischerville, and presenting every appearance of an artifact.

Mr. William T. Davis exhibited and described sections of tree trunks, showing the destructive work of carpenter ants, and read a paper on "Nests of the Carpenter Ant." (Printed in full in this issue, p. 10.)

Mr. Charles L. Pollard exhibited a specimen of Georgia pine wood, stained in several colors, and discussed the value of a collection of woods

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of different kinds, treated in a similar way, to illustrate the effects of various finishes and stains.

Mr. Alanson Skinner exhibited and described the several kinds of Iroquois Indian rattles; also a drum and flute.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 21, 1907

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

About thirty-eight members and guests were present.

The minutes of the meeting of November 16, 1907, were read and approved.

The following were elected to active membership: Daniel T. Cornell, Ernst Cossmann, Mrs. George W. Curtis, Mrs. Horace A. Davis, Louis Dejonge, Jr., George W. Dix, Miss Ellen M. Harris, Mrs. George F. Hicks, Edward T. Kennedy, Mrs. T. Livingstone Kennedy, John J. Kenny, Cornelius G. Kolff, Jr., John D. Leggett, John J. O'Doran, Miss Anne Rhodes, William H. Richardson, Charles W. Schutzendorf, Mrs. Louis A. Stirn, Miss Eleanor R. Tilden, John S. Warde.

The Curator announced that bids for the construction of 14 table cases and 9 upright cases for the museum had been opened in the office of the President of the Borough on December 3, and that the lowest bidder was Siegel, Cooper & Co., their figures being $935.20 for the table cases and $863.28 for the upright cases, or a total of $1.798.48. He stated that the contract for construction had not yet been awarded.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited specimens and read a paper on the "Discovery of Lignitic and Bituminous Coal at Kreischerville." (Printed in full in this issue, p. 13.)

Mr. William T. Davis exhibited a diary, written by the late George Wotherspoon, during the years 1846–1852, and read a paper on "A Staten Island Weather Record of Sixty Years Ago." (Printed in full in this issue, p. 14.)

Mr. James Chapin exhibited skins of Brewster's, Lawrence's, golden-winged, and blue-winged warblers, calling attention to the differences in plumage coloration and its biological significance, and read a paper on "Lawrence's and Brewster's Warblers." (Printed in full in this issue, p. 21.)

Mr. Davis remarked also on the fruit-eating habits of the English starling, *Sturnus vulgaris* L., and exhibited preserved specimens of pears from his garden and photographs of the fruit showing the destructive work of the birds.

Mr. Alanson Skinner exhibited a collection of Delaware Indian relics and implements and explained their origin and uses. The collection included a bow, arrows with twisted feathers, wooden bowl, mush scoop

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and stirrer, burden strap of slippery elm bark, string of wampum, headdress of turkey feathers with beaded band, earrings, and brooches.

Mr. John De Morgan presented a clipping from the *Yorkshire Weekly Post,* published in Leeds, England, May 25, 1907, containing an unsigned account of our local seventeen-year locust visitation in 1876.

The meeting then adjourned.

REGULAR MEETING, JANUARY 18, 1908

The meeting was held at the Staten Island Academy, New Brighton. President Howard R. Bayne in the chair.

About forty members and guests were present.

The minutes of the meeting of December 21, 1907, were read and approved.

The following were elected to active membership: Daniel Campbell, Miss Delia Cumiskey, Rodger P. Doyle, Thomas J. Featherston, Mrs. Arthur Hollick, Mrs. George S. Humphrey, Harold W. Miller, John E. Seaton, Gerald F. Shepard, Miss Grace V. Talkington, Mrs. James R. Walsh, John J. Wood.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick presented a specimen of dolomite obtained from the foundation wall of the Hotel Castleton and commented on the historical interest which it possessed, as representing a piece of the old "Marble House," which formerly occupied the site and was for a generation one of the most celebrated private mansions in the vicinity of New York.

In connection with the specimen Mr. Edward C. Delavan, Jr., exhibited a copy of a map of the property inscribed with the legend

A Map
of
Property Situated at
Staten Island
belonging to
D. D. Tompkins
July 16, 1819
Scale 80′ = 1″ Surveyed by
John T. Ludlam

and read a paper on "The Marble House." (Printed in full in this issue, p. 23.)

Dr. Hollick presented specimens of amber collected in the Cretaceous deposits at Kreischerville and read a paper on "Chemical Analysis of Cretaceous Amber from Kreischerville." (Printed in full in this issue, p. 34.)

Mr. David M. Van Name presented a large mass of rose quartz from New Milford, Connecticut, together with a specimen of the ground rock, and read a description of the method of grinding in order to obtain the material as a fine abrasive for the manufacture of sapolio, etc.

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Mr. Thomas A. Fulton exhibited maps of Greater New York with the contours designated by different colors and lines, and commented on the significance of the elevations in connection with the water supply problem in the several boroughs.

Mr. Howard H. Cleaves exhibited photographs of a maple tree near Princes Bay, which was struck and completely destroyed by lightning last summer and read a paper on "The Peculiar Action of Lightning on a Maple Tree." (Printed in full in this issue, p. 35.)

The meeting then adjourned.

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Publications of the Association

Proceedings of the Natural Science Association of Staten Island

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883 to June 3, 1905, and were included in nine volumes, separately indexed, as follows:

Volume I, pp. 74, Nov. 10, 1883—Oct. 13, 1888
" II, pp. 87, Nov. 10, 1888—Oct. 10, 1891
" III, pp. 67, Nov. 14, 1891—Oct. 14, 1893
" IV, pp. 86, Nov. 11, 1893—Oct. 12, 1895
" V, pp. 97, Nov. 9, 1895—Oct. 10, 1896
" VI, pp. 64, Nov. 14, 1896—Oct. 8, 1898
" VII, pp. 79, Nov. 12, 1898—Oct. 13, 1900
" VIII, pp. 92, Dec. 8, 1900—Oct. 10, 1903
" IX, pp. 51, Nov. 14, 1903—June 3, 1905

Any of the above listed volumes may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, Mar. 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, Mar. 10, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, Oct. 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Proceedings of the Staten Island Association of Arts and Sciences

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents and Index, is as follows:

Part I, June–December, 1905, pp. 1–20, issued April 10, 1906.
" II, January–May, 1906, pp. 21–69, issued July 9, 1906.
" III, October–December, 1906, pp. 71–92, issued April 17, 1907.
" IV, January–May, 1907, pp. 93–136, issued September 20, 1907.

The Act of Incorporation, Constitution, and By-Laws, etc., (Pamph., 8vo, pp. i–xxv. 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i–xxxvii. 1907), will be sent free on application.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

Staten Island Association of Arts and Sciences,
Borough Hall, New Brighton, N. Y.

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VOL. II February–May, 1908 Part II

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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[Issued September 30, 1909]
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[1] Resigned January 4, 1908; succeeded by Samuel McKee Smith.
[2] Resigned January 4, 1908; succeeded by Charles Arthur Ingalls.

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES
[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOL. II FEBRUARY–MAY, 1908 PART II

Notes on New Jersey Amphibians and Reptiles[1]

BY WILLIAM T. DAVIS

The Annual Report of the New Jersey State Museum for 1906 contains an interesting account of the amphibians and reptiles of that state by Henry W. Fowler of the Academy of Natural Sciences of Philadelphia. The report is well illustrated and evidently much care has been bestowed upon the text. It is of particular interest to Staten Islanders as geographically we form a part of the territory it aims to cover.

Another paper on this subject appeared in the *American Naturalist* for March, 1906, under the title of "Notes on Reptiles and Batrachians of Pennsylvania, New Jersey and Delaware," by Witmer Stone. The following notes may be of interest in connection with these two publications.

Amblystoma opacum (Gravenhorst). On September 15, 1907, I found four of these salamanders at Lakehurst, N. J., in a small barrel partly sunken in the ground on the edge of a pond. The salamanders had fallen into the barrel and were unable to get out again. This species has also been collected at Matchaponix

[1] Presented February 15, 1908.

[Vol. II, Part I, pp. 1–46, was issued October 17, 1908.]

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near Jamesburg, N. J., and at Sparta, Halifax, and in the Great Swamp in the northern half of the state. It has also been found on Staten Island, though probably no more are to be collected. We have also raised it from a tadpole collected at Little Falls, N. J., March 12, 1898, and for over two years had this plump and prosperous looking individual named "Sambo" residing under a stone in a crock partly filled with damp clay. When the stone was removed and a piece of raw meat on the end of a dried goldenrod stem was presented to the creature, he took it readily enough, and the bulging eyes made a sudden dip into their sockets with the disappearance of the morsel. Sambo died in May, 1900, when he was three and one-fourth inches long.

Amblystoma punctatum (Linnæus). I have seen a considerable number of these salamanders and their milky white balls of eggs on top of the Palisades. Until lately it was also not an uncommon species on Staten Island.

Hemidactylium scutatum Tschudi. This species has been collected at Newfoundland, N. J., under a stone, and quite numerously at Suffern, N. Y., just over the northern border of New Jersey. It has also been found on Staten Island, though not in recent years.

Plethodon glutinosus (Green). We have collected this species in the Great Swamp, Morris Co., and found it abundant at Suffern on the northern border line of the state. It has also been found on Staten Island, but not recently.

Bufo lentiginosus (Shaw). The "common toad" is referred to under the name of *B. lentiginosus*. However, we can say that at Lakehurst and at other localities in the lowlands, including Staten Island, we have found the harsh-noted *Bufo fowleri* Putnam common, while at Newfoundland, N. J., fine examples of *Bufo americanus* Le Conte, a more sluggish and pleasanter voiced variety or species occurs in considerable numbers.

Scaphiopus holbrookii (Harlan). During the heavy storms of August 1 and 2, 1906, Mr. Louis H. Joutel observed many of these toads at Lakehurst, N. J., in a depression temporarily

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filled with water. Their discordant notes could be heard a long distance. On July 20, 1907, I found at Lakehurst two partly grown individuals that had fallen into a cemented drain, up the steep sides of which they could not climb. On August 17 another was found in the same drain, and still another at the bottom of a shallow well that had become nearly dry. On October 12, 1907, with Professor Wm. M. Wheeler and Mr. G. P. Engelhardt, we found a somewhat larger individual in the same cement-lined drain. One of these toads was kept alive some time and fed on flies, but died after being fed on green flies. Mr. Engelhardt also had a frog die suddenly after it had devoured meat flies. The spade-foot toad has also been found on Staten Island.

Pseudacris triseriatus (Wied.). The swamp tree toad was found in considerable numbers in small pools bordering the railroad track at Singac, N. J., on March 12, 1898.

Hyla andersonii Baird. In addition to the notes on this species printed in the *American Naturalist*, it may be added that it occurs still further north than Lakehurst and Farmingdale, and has been heard by the writer at Jamesburg on the South River. Messrs. Miller, Chapin, and Skinner have found the frog at Runyon, also on the South River. It no doubt occurs as far north as the Raritan.

On the evening of July 19, 1907, I went hunting *Hyla andersonii* at Lakehurst. The first one that I heard was in a small red maple and about eight feet from the ground. This was quite high up, for they usually climb only five or six feet from the ground. I could not reach the little frog, nor could I bend the sapling that hung over a marshy place. I therefore shook it suddenly, which caused the frog to jump into a still smaller maple. This I could bend over, and it sat looking at me until I captured it with my hand.

Of quite a different disposition was the next one I found. It also was in a small maple, but when it saw me and I tried to capture it with my two insect nets, it immediately jumped and

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as it was getting quite dark by that time, I was unable to locate it on the ground among the undergrowth. A little later I heard it singing again, and so went back to find that it had climbed up a huckleberry bush that was covered with a considerable growth of *Smilax glauca*. The leaves of the vine made it quite difficult to locate the frog, which must have been near, for when I drew very close it hopped on to a lower part of the bush, and though I tried to capture it with my two nets, I was unsuccessful. This frog was a most persistent singer, and so in a short time I went back to the same bush up which it had climbed after being so rudely dislodged. After much looking and with the aid of the moon, I located the frog on the flat side of a *Smilax* leaf and brought the two nets together with the result that I found the frog in one of them.

The next evening I found one in a cedar tree in a swamp. When I got around the tree through the bushes to where the frog had been, I found that it had gone to the side of the tree that I had just left. As I approached slowly it would jump from tree to tree, and from limb to limb, every now and then stopping to sing when it heard the calls of its rivals, two of which were in the same small swamp. In this way I slowly pursued the frog, being much interested in its well-founded fear and its inability to keep quiet. It never climbed over six feet from the ground so that I easily captured it when I desired.

Elaphe obsoletus (Say). The pilot black snake was found not uncommonly some years ago at Denmark Pond, near Green Pond, northern New Jersey, by Mr. Ernest F. Neilson.

Storeria occipito-maculata (Storer). Two examples of this little snake have been found at Lakehurst. One of them had fallen into the same drain that trapped the spade-foot toads, and the other had been run over by a wagon on the road.

Opheodrys æstivus (Linnæus). A specimen of this slim little green snake was found partially coiled about a branch of a small oak at Lakehurst, July 13, 1902. Mr. Joutel and I made considerable preparations to capture it, but I finally picked it off

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the scrub oak with my hand, it making hardly any effort to escape. It looked remarkably like a portion of the scrub oak, or a bit of greenbrier. It escaped twice while I had it alive as it was able to get through remarkably small holes. On one occasion I found it fast in a small hole through which it could only get the fore part of its body. There it stuck until released, and in its efforts to get away it had damaged some of its scales. Another time it succeeded in getting entirely free from its cage, and I found it tightly wound about the rounds of a chair.

Pituophis melanoleucus (Daudin). Pine snakes have been observed by Mr. C. W. Leng and myself at Lakehurst, and near Brookville. They are much hunted for their skins, which are large enough to be used in the manufacture of pocketbooks, etc. They are sold for about 40 to 50 cents each.

Lampropeltis getulus (Linnæus). Two specimens of the chain snake were found at Lakehurst, by Mr. Joutel and myself on June 30, 1907. The little one was in a decayed railroad tie, and the larger was endeavoring to burrow into the side of a cranberry bog embankment.

The large specimen was taken home alive, and on July 8 she laid 16 eggs, about which I found her coiled. Though given other snakes and toads, she refused all food. She was of a mild and placid disposition.

Agkistrodon contortrix (Linnæus). I have found the copperhead snake on the first range of mountains west of Somerville, at Green Pond, and in the mountains near the state line at Ramapo. It occurs also in considerable numbers at Newfoundland. Mr. A. Radclyffe Dugmore informed me that several had been killed near his home, and myself and friends have also found several at Newfoundland.

Crotalus horridus Linnæus. A rattlesnake was killed by berry pickers not far from Lakehurst in the summer of 1905 and brought into the village. They are reported to be more common near the Green Branch of Big Wrangel Brook. I saw a rattle-

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snake on July 28, 1894, at Culver's Pond on the edge of the Kittatinny Mountains. It had been killed that day as it lay on the upper rail of an old fence.

Malaclemmys centrata concentrica (Shaw). Mr. Fowler finds the diamond-back terrapin an uncommon turtle in New Jersey, probably owing to the fact that it is so highly prized as food and the consequent persistent persecution. It is still hunted on Staten Island by a few individuals who are acquainted with its habits, and they secure a number annually. Mr. Alanson Skinner, Mr. James Chapin, and the writer have each secured living specimens taken in the salt marshes of the island, and we found a small example at the mouth of New Creek some years ago in early spring.

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The Massacre of the Lenapé Indians in 1643[1]

By Alanson Skinner

Prior to the year 1642 the constant chafing of the Dutch and their Algonquin neighbors had been growing daily more and more unbearable owing to the high-handed and unjust bearing of the Director (Kieft), who permitted the Indians to be maltreated at the will of the colonists, and a crisis was finally reached.

A Dutch colonist, Myndert Myndertsen van der Horst, purchased (against the will of the majority of the Hackensack, a local branch of the Unami Lenapé, who held what is now Jersey City, Hoboken, Weehawken, Newark, Passaic, etc., and a part of Staten Island) a tract of land, extending, according to Reuttenber, from "Archer Cul bay north towards Tappan, and included the valley of the Hackensack River. The headquarters of the settlement were about five or six hundred paces from the principal settlement of the Hackensacks." A Hackensack warrior was enticed into the settlement, made intoxicated, and, as is usual to this day when white men deal with their "inferiors," robbed of his beaver skin robe.

When the warrior recovered he went away vowing vengeance, and later returned armed with his bow and arrows. A colonist named Garret Jansen van Voorst was thatching the roof of one of the houses of the settlement, and the angry warrior shot and killed him.

The chiefs at once repaired to their stanch friend, the humane De Vries (they were afraid to visit Fort Amsterdam for fear Kieft would imprison them), and offered De Vries two hundred fathoms of wampum as blood atonement to the murdered man's family. De Vries finally persuaded the sachems to accompany him to Fort Amsterdam where they repeated their

[1] Presented February 15, 1908.

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offer to the director, who refused it and demanded the murderer. It was impossible for the chiefs to bring him in as he had fled elsewhere, and as their offer was again renewed and refused they returned with troubled minds to their homes.

In February, 1643, a party of eighty Mohicans (not Mohawks, as has often been stated) armed with rifles made a raid upon the Indians of Manhattan and above, who with the local Indians, fled to the fort for protection as they were unable to cope with an enemy bearing firearms. The Dutch cared for these fugitives for about two weeks, after which they returned to their homes, but shortly another alarm sent them running to the fort. Kieft was importuned by a committee of twelve citizens to permit them to attack the defenseless Indians. He did so as follows—"We, therefore, hereby authorize Maryn Andriansen, at his request, with his associates, to attack a party of savages skulking behind Corlear's Hook, or plantation, and act with them in such manner as they shall deem proper and the time and opportunity shall permit. Sergeant Rodolf is commanded and authorized to take under his command a troop of soldiers and lead them to Pavonia, and drive away and destroy the savages behind Jan Evertsen's, but to spare as much as possible, their wives and children, and take the savages prisoners . . . this exploit to be executed at night, with the greatest caution and prudence. Our God may bless the Expedition. Done February 24th, 1643." Ocallaghan, 1: 267, 268.

De Vries did his best to stop this bloody enterprise, but without success. What followed we give in his own words (taken from the Annual Archæological Report of the Provincial Museum of Toronto for 1894–5, p. 75, where De Vries is quoted as follows):

"Anno 1643. The 22nd of February, there broke out a war among the Indians. The Mayekandus who came from Fort Orange, wanted to levy a contribution upon the Indians of Wickquasgeck and Tapaen and of the adjacent villages. There were eighty to ninety of them each with a gun on his shoulder.

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There came flying to my house, four or five hundred Indians, desiring that I would protect them. I answered that I could not do it as the Indians at Fort Orange were our friends, and that we could not interfere with their wars; that I now saw that they were children, and that they were flying on all sides from eighty to ninety men where they themselves were so many hundred strong: that it was pleasing to me that they should be soldiers, as it was to mannetoe himself—that is to say the devil; but that I saw now they were only children. As my house was full of Indians, and I had only five men with me, I made ready to go to the Fort to obtain some soldiers for the purpose of having more force in my house. So I took a canoe as my boat was frozen up in the Kill, and went in the canoe or hollow tree, which is their boat, as before related, between the cakes of ice, over the river to Fort Amsterdam where I requested the Governor Kieft to assist me with some soldiers, as I was not master of my own house, because it was so full of Indians, although I was not afraid they would do any harm: but it was proper I should be master in my own house. The Governor said he had no soldiers; that I must see how it would be in the morning; and stop at night with him, which I did. The next day the Indians came in troops on foot from my house to Pavonia. . . . I spoke to some of them and they said they had all left my house.

"The 24th of February sitting at a table with the Governor, he began to state his intentions, that he had a mind to 'wipe the mouths of the Indians.' I answered that there was not sufficient reason to undertake it . . . but it appeared that my speaking was of no avail. He had, with his co-murderers, determined to commit the murder deeming it a Roman deed, and to do it without warning the inhabitants in the open lands, that each one might take care of himself against the retaliation of the Indians, for he could not kill all the Indians. . . . So was this business begun between the 25th, and 26th of February in the year 1643. I remained that night at the Governors, sitting up. I went and sat in the kitchen, when about midnight I heard great shrieking

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. . . saw nothing but firing, and heard the shrieks of the Indians murdered in their sleep.

" I returned to the house (again) by the fire. Having sat there a while, there came an Indian with his squaw whom I knew well, and who lived about an hour's walk from my house, and told me that they two had fled in a small skiff, . . . that the Indians from Fort Orange had surprised them, and that they had come to conceal themselves in the fort. I told them they must go away immediately, that there was no occasion for them to come to the fort to conceal themselves; that they who had killed their people were not Indians but the Swannekens as they called the Dutch. They then asked me how they could get out of the fort. I took them to the door, and there was no sentry there, and so they betook themselves to the woods. When it was day the soldiers returned to the fort, having massacred or murdered eighty Indians, and considering they had done a deed of Roman valor, in murdering so many in their sleep: where infants were torn from their mother's breasts, and hacked to pieces in the presence of their parents, and the pieces thrown into the fire and into the water, and other sucklings were bound to small boards, and then cut, struck, and pierced, and miserably massacred in a manner to move a heart of stone. Some were thrown into the river, and when the fathers and mothers endeavoured to save them, the soldiers would not let them come on land but made both parents and children drown—children from five to six years of age, and also some decrepit persons. Many fled from the scene, and concealed themselves in the neighboring sedge, and when it was morning came out to beg a piece of bread and to warm themselves; but they were murdered in cold blood and tossed into the water. Some came by our lands in the country with their hands, some with legs cut off, and some holding their entrails in their arms, and others had such horrible cuts and gashes that worse than they were could never happen. And these poor simple creatures, as also many of our own people did not know any better than that they had been attacked by a party of other

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Indians—the Maquas. After this exploit the soldiers were rewarded for their services. . . . At another place on the same night at Corler's Hook, on Corler's plantation, forty Indians were in the same manner attacked in their sleep, and massacred there in the same manner as the Duke of Alva did in the Netherlands, but more cruelly. . . . As soon as the Indians understood that the Swannekens had so treated them, all the men whom they could surprise on the farm lands they killed; but we have never heard that they ever permitted women or children to be killed."

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Wilson's Petrel in New York Harbor[1]

By James Chapin

Wilson's petrels, *Oceanites oceanicus* (Kuhl), better known among sailors as "Mother Carey's chickens," are especially interesting in that they breed in the southern seas in January and February and then migrate to the North Atlantic, where they spend the months from May to September. They are thus of regular occurrence off our coast in summer, not infrequently visiting our harbors. Indeed, as Mr. F. M. Chapman states in his list of "The Birds of the Vicinity of New York City," they sometimes enter the Lower Bay of New York harbor in numbers.

Observations during 1905 and 1907, enable me to amplify this statement. My first experience with the petrels was in the summer of 1905, when, during early July, they were numerous in the Upper Bay, and might be watched to advantage from the Staten Island ferryboat. On several occasions, fully forty were seen during single trips across the bay. They tarried about a week, and then I saw them no more until June 22, 1907. On that date, approximately twenty-five were observed from the ferryboat in the morning; and in the afternoon, with Mr. J. T. Nichols, I counted about an equal number. The day following, Mr. Andrew Johnstone, of the American Museum, went fishing off Great Kills, in the Lower Bay, and later reported that he saw fully a hundred. For several days, until the twenty-sixth, they were seen regularly in the Upper Bay, and one still remained on July 1. They then disappeared until August 5; but from the fifth to the twelfth were again noted in varying numbers in the Upper Bay.

On the afternoon of August 6, I repaired to Great Kills and set out in a rowboat in search of petrels. A short distance

[1] Presented February 15, 1908.

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outside Crooke's Point the first was encountered, and from that time till sunset they were scarcely ever out of sight. Acting on the advice of Mr. Nichols, I had provided myself with a piece of salt pork, which I cut up into small bits and threw overboard. My trouble was well repaid, and the graceful movements of the petrels as they fluttered down, pattered along the water, and seized the coveted morsels, afforded great pleasure. Several specimens were secured, which illustrated a number of interesting points. The throats of all, even those that had not partaken of my salt pork, were full of greasy liquid, evidently food; and they could expand their lower jaws somewhat as a pelican does. Their wing quills, too, were being molted. Though it was of course difficult to estimate the number of birds seen, I should suppose there were at least one hundred and twenty-five.

On August 11, Mr. R. C. Murphy followed my example, and reported the petrels as still very numerous off Great Kills, though I believe he had to go further out than I. From the twelfth to the twenty-fourth no more were seen, though Mr. Murphy and I made a trip to Great Kills especially on their account. On the twenty-fourth, however, they were very plentiful off the south shore of Staten Island, from New Creek to Princes Bay. A day later they disappeared, except for some seen on September 3 and 5 in the Upper Bay.

As a rule the petrels did not ascend the Upper Bay further than Governor's Island, though they were once observed only a few hundred yards out from the Staten Island ferry slip at the Battery. On August 6, in the Lower Bay, several were seen within a hundred yards of the shore at Oakwood, and on the twenty-fourth, though farther out, they might easily be discerned from the beach at New Dorp.

It may be well to insert a table, showing the approximate numbers observed during the summer of 1907. The record for the Upper Bay is quite complete, for I was able to note the presence or absence of petrels on almost every week-day throughout the season.

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	Date		Upper Bay	Lower Bay
June	22	A. M.	25	
		P. M.	25	
	23	A. M.		about 100
	24	A. M.	25	
		P. M.	1	
	25	A. M.	3 or 4	
		P. M.	1	
July	1	A. M.	1	
August	5	A. M.	10 or 15	
		P. M.	18	
	6	A. M.	16	
		P. M.	2	about 125
	7	A. M.	45	
		P. M.	8 or 10	
	8	A. M.	4	
	11	A. M.		"very numerous"
	12	A. M.	15	
	24			about 150
	25	A. M.		2 or 3
September	3	A. M.	15	
	5	A. M.	5	
		P. M.	20 or 25	

This table shows how the petrels seemed to appear in waves, never remaining in the Upper Bay for much more than a week; and this fact suggests the question as to cause. Heavy weather is frequently given as the reason, though we have seen "Mother Carey's chickens" in the Upper Bay when a fog was the only indication of a possible storm outside the Hook; but the case of August 24 is significant. The two previous nights had, as I remember, been very stormy, and it was still drizzling on the morning of the twenty-fourth. As already stated, Wilson's petrels were very common in the Lower Bay on that date, and were seen even at Princes Bay, where Mr. Isaac Wort was camping on the beach. In the afternoon, however, the sky cleared; and the next morning Mr. Wort saw but two or three petrels, while I, during a long walk along the beach in the afternoon, noticed none at all.

In conclusion I may add that Mr. Almer Decker, of Tottenville, who has had a very long acquaintance with our Lower

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Bay, also noticed the abundance of petrels in the harbor last summer. In his experience, so he told me, though they did not occur there at all regularly, they were nevertheless not uncommon but seldom came further south along the Staten Island shore than Princes Bay. About three years before last summer, however, some where observed even off Ward's Point, after a severe storm.

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A Case of Involuntary Suicide[1]

By Lloyd M. Bayne

At Intervale, our country place in the town of East Jewell, in Greene Co., N. Y., in the heart of the Catskills, a singular case of involuntary suicide happened in the summer of 1904.

A barn swallow, *Chelidon erythrogaster* (Bodd.), built its nest under the eave of the roof of a chicken house, just over a window. The dwelling house is about 75 yards from the chicken house. The bird used mud and horse hair in building the nest. Horse hair was plentiful on a fence near by, where the horses rubbed themselves and in so doing left a quantity of hair, and this no doubt helped the swallow to make its home. One day while the bird was busy about its nest it became entangled around the neck by a long strand of horse hair. Efforts to free itself were in vain. The more it struggled the tighter became the strand of hair around its neck. Exhausted by its struggles it fell outside the nest, suspended by the strand of hair, and was strangled to death.

There it hung for months. While it was hanging there no swallow or any other bird was seen to enter the nest, and the nest finally crumbled away without having any bird occupy it or visit it so far as we could see.

[1] Presented February 15, 1908.

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High-Bush Blueberries[1]

By William T. Davis

There are a number of cranberry bogs at Lakehurst, N. J., that have long been abandoned and are overgrown with many blueberry bushes and small white cedars. The ground being wet the prevailing blueberries are what are now specifically known as *Vaccinium corymbosum* or high-bush blueberry, and *Vaccinium atrococcum* or black fruited blueberry. These two species are recognized as desirable on account of their superior fruit, especially that of *V. corymbosum,* which is large, juicy, covered with a bloom, and quite sweet. The fruit of *V. atrococcum* is smaller, black, and not so sweet.

Asa Gray says of *V. corymbosum* in the fifth edition of his Manual: "The species exhibits the greatest variety of forms, the last of these here mentioned is the most remarkable, and the only one which has any claims to be regarded as a species." Then followed four varieties of the last of which he says: "Var. *atrococcum* has the leaves entire, downy or woolly underneath even when old, as also the branchlets; berries smaller, black, without bloom."

In the *Bulletin of the Torrey Botanical Club* **21**: 24. 1894, Mr. A. A. Heller under the heading of *Vaccinium atrococcum* (A. Gray) says: "This plant, long since proved to be a very distinct species, must bear the name given above, all the others with which it has been associated at different times being homonyms."

While bushes may be found commonly on Staten Island and elsewhere, that can be immediately placed in either of these two species as at present recognized, yet there are some forms that cannot be so easily disposed of. At Lakehurst, for instance, I noticed in the latter part of July, 1907, many intermediate blue-

[1] Presented March 21, 1908.

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berry bushes. The fruit had a bloom, but the berries were not so blue as in *V. corymbosum,* nor were they so large. The small and young branches of the year's growth were pubescent, as were the under sides of the leaves. I have also found on Staten Island bushes with large fruit with bloom, and pubescent leaves. From this it will appear that while it is advisable to consider the forms known as *V. corymbosum* and *V. atrococcum* as species, yet the fact that there are many bushes showing intermediate characters should not be lost sight of.

A somewhat similar case is to be noted in *Gaylussacia resinosa,* which has commonly black fruit, while in *Gaylussacia resinosa glaucocarpa* Robinson the fruit is larger and has a bloom. The variety *glaucocarpa* grows also at Lakehurst.

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Notes on Some Staten Island Mammals[1]

By James Chapin

Microtus pinetorum scalopsoides. Pine Mouse.

In the Proceedings for January, 1907, the capture of a pine mouse at Woodrow, Staten Island, by Mr. Isaac E. Wort was recorded, and it was stated that the species had hitherto been overlooked on our island. The suggestion was also made that pine mice might occur in other sandy parts of Staten Island. Up to the present time, however, we have no additional specimens except from Woodrow, where Mr. Isaac Wort and his sons have since caught about seven more.

Those now in my possession are as follows:

♀ Woodrow, Staten Island, January 6, 1907, Isaac E. Wort.

♀ Woodrow, Staten Island, March 26, 1907, Isaac E. Wort.

♀ Woodrow, Staten Island, April 8, 1907, Isaac E. Wort.

♀ Woodrow, Staten Island, May 17, 1907, George Wort.

A female with young was plowed up last spring by Mr. Wort, but was devoured by a cat before it could be sent to me; and another individual was captured and given to Mr. Wm. T. Davis.

Zapus hudsonius americanus. Jumping Mouse.

At the meeting of the Staten Island Association of Arts and Sciences in October, 1905, I exhibited a live jumping mouse, captured near the Moravian Cemetery, Staten Island, which lived subsequently in captivity until December 23, 1905. There were then but few records of jumping mice on the island, but Dr. Philip Dowell has told me that he has seen a number of them during his botanical excursions.

During the past two years I have also seen them more or less regularly, and would now feel justified in saying that they are not at all uncommon, though rather secretive. At Great Kills,

[1] Presented March 21, 1908.

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Staten Island, on May 30, 1906, two were found drowned in some flooded post holes. Some other recent captures are:

♂ Woodrow, S. I., September 15, 1907, James Chapin.

♀ Lakes Id., S. I., September 18, 1907, James Chapin.

♀ Woodrow, S. I., December 22, 1907, Alanson Skinner.

♂ Woodrow, S. I., March 14, 1908, Samuel Wort.

The one found by Mr. Skinner, on December 22, 1907, was lying dead in a freshly plowed field, where it had evidently been hibernating. On March 14, 1908, Mr. Samuel Wort dug up a jumping mouse at Woodrow. It was in a round nest, made of catbrier (*Smilax*) leaves, and placed some eight or ten inches beneath the surface of the ground. The individual caught at Lake's Island, on September 18, 1907, was kept alive nearly two months. As the weather grew cold, it began to spend a large part of its time in the characteristic hibernating attitude, rolled up in a ball, with its long hind legs embracing its head, and its lengthy tail curled neatly about itself; but it died before winter had set in.

Blarina parva. Least Mole Shrew.

In March, 1905, at the meeting of the Natural Science Association, Mr. Wm. T. Davis announced that he had added another mammal to the New York State list, by finding the least mole shrew at Long Neck, Staten Island. Dr. Dowell also has a specimen from the same locality; and so I naturally concluded that they might be looked for on Lake's Island, which lies only a short distance from Linoleumville, across the Fresh Kill. It was not a great surprise, therefore, when Mr. Richard P. Smith discovered one at that place, under an old piece of tar paper, on September 15, 1907. We caught it without difficulty, and with Mr. Smith's permission I took it home, for a living specimen is generally considered somewhat of a rarity. It was a most astonishing sight to watch this little shrew attack the live crickets with which it was fed. Many of them were almost half as large as their pursuer, and they were apparently discovered almost wholly by the sense of smell, but one snap of the shrew's jaws

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would settle the cricket's fate, and in a few minutes nothing would remain of it except a few of the harder parts of the shell.

Only a few days elapsed before the shrew itself died; and though I have attempted to trap some more of the same species on Lake's Island, I have secured only a couple of individuals of the larger and more abundant form, *Blarina brevicauda,* which is to be found in exactly the same situations as its diminutive congener.

Condylura cristata. Star-nosed Mole.

Attention should be called to the mention, in the PROCEEDINGS for October, 1906, of a star-nosed mole's skull that was found in a barred owl's nest at Great Kills, Staten Island. There is, I am told, but one earlier record for this peculiar mole on our island. On Long Island, too, it is rarely found, for there are as yet but two published records of its occurrence there.

Some time after the discovery of the above mentioned skull, in examining some owl pellets, I came across another skull of the same kind of mole. Unfortunately it was contained in a pellet. the history of which was lost, though I know it came from Staten Island, and probably from the south side. Recently, in some pellets picked up beneath the roost of a barred owl at Annadale, Staten Island, on March 15, 1908, I found the mandibles and humerus of a third star-nosed mole.

This evidence is quite reliable, for barred owls wander but little, and it seems to show that the star-nosed mole is not so rare on Staten Island as we supposed.

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The Coot in the Vicinity of Staten Island[1]

By James Chapin

In spite of its reputation for abundance, the coot, *Fulica americana,* seems to be found only as a rather unusual fall migrant on Staten Island, where I know of but four records of its occurrence during the past few years. The first of these was killed by Mr. G. Chauncey Parsons, at Clove Lake, October 22, 1904, but only its feet were saved for identification.

On October 15, 1905, Mr. Wm. T. Davis, Mr. Alanson Skinner, and the writer discovered a coot in a small pond at Green Ridge, Staten Island; but it refused to leave the pond, even though forced several times to take wing, and preferred to hide in the grass that fringed the shore. In rising from the water it always pattered along for a considerable distance with its feet.

The seclusive habits of this bird resemble those of other coots seen in the marshes near Newark, N. J., in June and July, 1907, by Mr. W. D. W. Miller and myself. There several pairs of coots were breeding, with the famous colony of Florida gallinules, *Gallinula galeata,* and an excellent opportunity was thus afforded for a comparison of the habits of coots and gallinules. The coots seemed slightly fonder of open water; but on the least alarm they would scuttle into the cattails, where it was useless to follow them. While swimming they could be distinguished at once from the gallinules by their shape. A gallinule would carry its tail high out of water, while the upper part of its back was almost submerged, but a coot would sit much more horizontally in the water. In addition to this, the red bills of adult gallinules, and the white bills of adult coots were visible at a considerable distance.

The two most recent examples of the coot taken on Staten

[1] Presented March 21, 1908.

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Island were shot by Mr. Brinckerhoff, at Schoenian's Pond, September 29, 1907, and at Clove Lake, October 13, 1907, and were kindly presented to me. Three out of the four coots recently reported on our island were found, therefore, in the Clove Valley, and all in the fall migration. Though coots do breed as near as Newark, N. J., we could scarcely hope to have them nest on Staten Island because of the lack of any suitable locality.

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Historic Maps of Staten Island[1]

By George W. Tuttle

Three centuries ago a great love for maritime adventure was the ruling passion. The sailor was a popular idol, and the boundaries of the known world were rapidly expanding. Great commercial companies which endeavored to control the trade of the world and find a short way to the treasures of India and China, spurred on their navigators to great deeds of daring and discovery. Cabot, Frobisher, and Davis, had made fruitless searches for a northern passage to China; Hudson had already made two unsuccessful voyages for the Muscovy Company in its quest and was about to begin another for the Dutch East India Company. This latter voyage resulted in his exploration of the great river bearing his name.

The maps we are to consider take us back to about the time of this discovery which is so soon to be commemorated. At the time of Hudson's voyage, to determine their position at sea, navigators had usually only a sea compass, a cross staff similar to that shown on Map No. 3, with which they determined the latitude by an altitude of the sun or pole star, and sometimes a very imperfect chart. The log had just been introduced to determine the speed of vessels but was not in general use until many years later. Longitude, which was generally reckoned from the Grand Canary, was determined from an estimate of the distance sailed and the compass bearing. The point so located was called by one of the authors of the period the point of imagination, possibly because it so often proved to be in error. With the progress of discovery many improvements in the art of navigation were greatly needed, particularly an accurate method for the determination of longitude. To hasten its discovery Philip III

[1] Presented April 18, 1908.

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of Spain offered 1,000 crowns in 1598, the States General following with an offer of 10,000 florins. It was expected at this time that longitude would be determined by the variation of the needle, which appeared to increase with regularity to the westward. One will observe that Hudson and other navigators of this time measured the variation of the needle quite frequently. The determination of longitude by lunar distance required more accurate tables of the moon than were in existence at the time, and a more accurate instrument than the cross staff with which to make the angular measurements. It was not until 1675 that the Greenwich observatory was established to advance nautical science, and not until 1731 that the sextant was invented. The improvement in the lunar tables so as to make them serviceable in longitude determinations was not effected until 1753, and Harrison's chronometer was not invented until 1761. Latitudes were therefore given on maps previous to about 1760 much more accurately than longitudes, which on account of their uncertainty were frequently omitted. Latitude and longitude, as we understand them, had been used by Europeans in map making for only about a century. The production of maps and charts had received a considerable impetus from the great amount of exploration, and some great advances had only recently been made in the projection of charts by Mercator, one of the earliest of modern cartographers. The Dutch led in these improvements as the result of the work of Mercator, Ortelius, and Hondius. The nautical maps in which the Dutch excelled at the beginning of the seventeenth century are called loxodromic or compass maps, because the courses of ships were plotted as straight lines, and distant shores were located from the courses and distances run by individual ships. At this time when so many compass lines were drawn from several points on a map, parallel rules were not in use, and the course of a ship was traced on a chart by placing one leg of a pair of compasses on the starting point and the other leg on a line which came nearest in direction to the course sailed. This leg was moved forward along the line

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and the other traced the path of the ship. The manner in which the maps of the time were produced may be inferred from the appointment by public decree in 1633 of William Blaeu as cartographer to the States General; it was his duty to examine the ships' logs and so amend the maps. The Dutch cartographers were given more to embellishing their maps with fine engraving than to accurate representation, and with the seventeenth century their influence disappeared.

The maps presented herewith are a few that are original or have special interest, of the many produced since October 4, 1609, when Juet, one of Hudson's company, records that "Wee came out also of the great mouth of the great river." On account of the importance of this port and the location of Staten Island in relation thereto, at "the great mouth of the great river" perhaps quite as many maps have been made of it as of any other part of our coast. A great many Dutch charts and atlases of the seventeenth century were published, in some of which Staten Island took strange shapes and in few was it represented with any degree of accuracy.

In the following century most of the maps were of English origin and the accuracy of the representation had greatly improved as can be readily seen from those selected.

Acknowledgment is here made to the Librarian of the Lenox Branch of the New York Public Library for permission to photograph maps numbered 1, 3, 4, 5, 6, 7, 8, 10, 11, 12, and 15, as well as for assistance rendered; to the United States Coast and Geodetic Survey for map number 16; and to Mr. E. B. Johnson for the photographic work.

No. 1. A COPY OF PART OF THE MAP OF "THAT PROVINCE" IN AMERICA MADE FOR JAMES I, KING OF ENGLAND, IN 1610, AND SENT TO PHILIP III, KING OF SPAIN, BY VELASCO, AMBASSADOR OF SPAIN, TO ENGLAND, IN HIS LETTER OF MARCH 22, 1611.

The letter reads in part as follows:

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London, March 22nd 1611:

"Sire: — This king sent last year a surveyor to survey that Province, and he returned here about three months ago, and presented to him (King James) a plan or map of all he could discover, a copy of which I send Y. M. Whose Catholic Person," etc.

This map and other papers were copied from the Spanish Archives of Simancas for Alexander Brown; and were reproduced in his book "The Genesis of the United States" published in 1890, when this map, including the territory from Newfoundland to Virginia, was made public for the first time.

The coast in the vicinity of New York was drawn, Mr. Brown thinks, from surveys by Hudson in 1609, and Argall in 1610. This map is presented as the earliest that shows Manhattan and Staten Island. It is of further interest on account of the possibility that the part of the map including the Hudson River, and the vicinity of New York, was plotted from Hudson's surveys. An examination of the map shows that while the coast lines near New York are mapped in approximately their correct direction, the Hudson River is shown about 13 degrees to the eastward of its true northerly course. The river must have been plotted from a survey, for Verplanck's Point, Dunderberg mountain, Peekskill, West Point, Anthony's Nose, Kingston, Athens, etc., can be identified on the map by the bends in the river, which are correctly located as to latitude and distance from the Narrows. The eastward trend of the river may be explained by the use of magnetic bearings for true ones in mapping its location, and we have Hudson's observation on his way up, that the compass needle pointed 13 degrees west of north. Tradition has it that Coney Island was the place where Hudson first landed, and while one would not expect to find it located on such a map yet it is there. The Mohawk is shown branching off and connecting with a large body of water, evidently intended for Lake Ontario, which appeared on some of the maps of the time as a lake of unknown extent and considerably out of its true

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position. The Hudson is mapped only a very short distance above this junction, which is plotted considerably north of its true position. Some think that a boat from the Half Moon went up to this point, but the weight of evidence tends to show that it turned back near Albany. The branching of the Mohawk and the abrupt termination of the Hudson as shown on this map can best be explained on the theory that Hudson's boat reached that place. The lake to the north and a river flowing southeasterly therefrom were shown on earlier maps, from which it is possible this northern part of the map may have been copied; or it may have been derived, as stated on the map as to certain parts thereof, from "the relations of the Indians."

The East River and Long Island Sound had evidently not been discovered when this map was made, as the land is shown unbroken on the east side of the Hudson, from the Narrows northward. If any one had attempted to follow up Hudson in the short space of time which elapsed between his return to England and the making of this map, the East River and Long Island Sound could hardly have failed of discovery. In the journal kept by Juet, one of Hudson's crew on this voyage, under date of September 3, 1609, he says: "At three of the clock in the afternoon we came to three great rivers." Historians have been in doubt as to what rivers these were, but if this map represents Hudson's impressions of the vicinity, the three rivers are evidently the Narrows, Arthur Kill, and Raritan River.

Hudson returned to England November 7, 1609. The English government forbade him to leave the country, and it was thought in June, 1610, that the English would send ships to Virginia to explore the river found by Hudson, but no such voyage is recorded. It would be expected then that the surveyor sent by the King to Virginia would have made use of all of the data collected by Hudson.

Strachey, a Virginia historian who wrote at the time, referring to Argall's voyage made from June to August, 1610, says he "made good from 44 degrees what Captayne Bartho. Gosnoll

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and Captayne Weymouth wanted in their discoveries, observing all along the coast, and drawing the plotts thereof as he steered homewards into the bay." Argall's log of this voyage shows, however, that he did not approach the coast near New York either going or returning.

Dr. DeCosta in General Wilson's Memorial History of New York, has discussed this map and reaches the conclusion that it is a copy of one made in 1607, and that therefore the compiler could not have known of Hudson's voyage. If he had received any information from Hudson, the river would have been shown terminating in a shallow brook whereas the river is indicated as a strait leading to a large body of water. Further, the map contradicts Hudson who represents the Hoboken side of the river as Manna-hatta, while this map puts the name on both sides, Manahata on the west, and Manahatin on the east. Dr. DeCosta thinks it not unlikely that Hudson had a copy of this map on board the Half Moon, and states that the original could not have been drawn later than 1608. If Dr. DeCosta's ideas in the matter are correct, a tolerably accurate survey must have been made of the Hudson as far north as Albany prior to Hudson's voyage, of which survey we have a record in this map. Such a conclusion is so much at variance with the accepted facts of history that it appears on its face as improbable.

It is believed that the influence of the maps of the day were instrumental in causing the surveyor to locate the Mohawk, and the great lake to the north, as he did; since little exact knowledge in regard to them was to be obtained.

The fact that Hudson used the term Manna-hata for the west side of the river, while it appears on the map as Manahata, seems to be in favor of the theory that this part of the map was based on Hudson's discoveries rather than otherwise.

This map shows the discoveries made in Virginia by Captain Smith in 1608, prior to his departure for England, and which were not published until 1612 and so far as the writer has been

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able to ascertain contains the latest and best information of the time; it is certainly more accurate than a large number of maps that have followed it, and is worthy of more study than it has received.

No. 2. A PART OF THE "CARTE FIGURATIVE" FOUND IN THE ROYAL LIBRARY AT THE HAGUE ANNEXED TO THE MEMORIAL PRESENTED TO THE STATES GENERAL ON THE 18TH OF AUGUST, 1616. BY THE DIRECTORS OF NEW NETHERLAND.

This map is referred to in the memorial as showing the extent of the discoveries made by Cornelis Hendricxsen in a small yacht named the "Onrust" (The Restless) built in the New Netherlands.

Adrian Block was the first known European to pass through the East River. He arrived in 1613, his vessel was burned, and he spent the fall and winter of that year in building the "Onrust" a vessel of about 16 tons and 44½ feet long. Block sailed through Hellegat into the Great Bay (Long Island Sound) and explored all the region thereabouts. He left his yacht and returned home. Captain Hendricxsen in this same yacht made further explorations. Brodhead says in regard to this map that it was probably prepared under Block's immediate supervision, and from data that he furnished immediately upon his return to Holland in 1614, and that it was probably exhibited to the States General for the first time in October 11, 1614. The charter granted on that day to the Directors of New Netherland, expressly refers to a "Figurative Map prepared by them" which described the seacoasts between the 40th and 45th degrees of latitude, which this map does. It moreover shows New Netherland as lying between New France and Virginia according to the description in the charter. The map was produced probably for the second time on August 18, 1616, when the memorial was presented to which it was found attached.

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This map was considered the oldest map of the State of New York, until the discovery of Map No. 1. Nieu Nederlandt appears for the first time upon a map and the first record of the name is found in the charter of 1614 above referred to. This map shows for the first time "Manhates" as an island. This is also the earliest map of the East River and Long Island Sound. The names Hellegat and Riviere vanden vorst Mauritius are respectively applied to Hell Gate and the Hudson River.

No. 3. AMERICÆ SEPTENTRIONALIS PARS A. JACOBSZ 1621.

This map shows very well the style of charts used by navigators at this period when the Dutch were in the lead. The many lines in all directions were a common feature of these charts. Instead of placing a compass rose in some unimportant part of the chart, as we do at present, they drew lines in the direction of the points of the compass from many centers, so that a mariner could go almost anywhere by following one of these lines. In those days the principal nautical instruments were the cross staff, compass, and chart, all very imperfect. The cross staff, which was the predecessor of our more modern sextant, and the manner of its use in determining latitude and other nautical measurements, may be seen in the upper left hand design.

R. Achter Kol first appears on this chart as the name of the present Arthur Kill. The name Achter Kol, or Col, as it usually appears in the maps and descriptions of the period, was not applied to Arthur Kill alone but also to Newark Bay and to the territory to the west of Arthur Kill as well. When the river was meant, the name was usually given, Riviere Achter Col, or Kil Achter Col. In the Dutch language, Col used as a geographical term has the meaning of defile, strait, or pass; while Achter means behind, and Kil a narrow channel of the sea. Achter Col, therefore, meant behind or back of the strait. Col or strait in the minds of those who gave these names apparently referring to the Narrows and New York Bay.

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No. 4. CARTA PARTICOLARE DELLA NUOVA BELGIA E PARTA DELLA NUOVA ANGLIA. FROM ROBERT DUDLEY'S ARCANO DEL MARE FIORENZA 1661.

(The first edition 1647 contained the same map which was probably prepared from older maps with additions and corrections to about the year 1631.)

From the fact that Boston, which was settled in 1630, appears on the map, while there is no notice of Maryland, which was granted a charter in 1632, it seems probable that the map was made about 1631. This map is interesting chiefly on account of what is probably the first appearance of the name of this island on a map, the name I. State, being given to a small island near Sandy Hook, which has little resemblance to the real Staten Island. This map indicates, then, that the name Staten Island had been given at some time previous to 1647, and probably as early as 1631. The Dutch records prove that the name was in use in 1630, for the patent to Michael Pauw, of Staten Island, which was attested by Minuit recites: "We the Directors and Council of New Netherland, residing on the Island of Manhatas, under the jurisdiction of their High Mightinesses the Lords States General of the United Netherlands, and the General Incorporated West India Company, at their Chambers in Amsterdam; witness and declare by these presents that on this day the date underwritten, came and appeared before us in their own proper persons. . . . Inhabitants, owners and heirs of the land by us (the Dutch) called the Staten Island, on the west shore of Hamels Hoofden, and declared that for and in consideration of certain parcels of goods . . . do by these presents transfer, cede, deliver and convey to and for the behoof of Mr. Michael Pauw. . . . Done at Fort Amsterdam aforesaid, in the Island of Manhatas, on the 10th day of August 1630."

The following account of New Netherlands in 1627 in a letter from Isaac de Rasures to Samuel Blommaert, found in the Royal Library at the Hague, indicates that Staten Island had no generally recognized name in 1626.

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"On the 27th of July 1626 by the help of God, I arrived with the ship The Arms of Amsterdam before the bay of the great Mauritse River, sailing into it about a musket shot from Godyn's Point, into Coenraets Bay; then sailed on North East and North North East, to about half way from the low sand bank called Godyn's Point, to the Hamels-Hoofden, the mouth of the river.

"The West point is an island inhabited by from 80 to 90 savages, who support themselves by planting maize.

"The East point is a very large island full 24 miles long (Dutch miles—4 English geographical miles).

"The Hamels Hoofden being passed there is about a mile width in the river, and also on the West side there is an inlet where another river runs up about 20 miles to the North North East, emptying into the Mauritse River in the highlands.

"At the side of the before mentioned little river which we called Achter Col, there is a great deal of waste reedy land; the rest is full of trees, and in some places there is good soil, where the savages plant their maize upon which they live, as well as by their hunting.

"The other side of the same small river according to conjecture, is about 20 to 23 miles broad to the South (now Delaware) river."

It seems probable, therefore, that the name Staten Island came into use some time after this letter was written and previous to 1630.

No. 5. NOVI BELGII NOVAEQUE ANGLIAE NEC NON PARTIS VIRGINIAE TABULA MULTIS IN LOCIS. EMENDATA A NICOLAO JOANNIS VISSCHERO.

(Issued in 1655. This is thought to be the earliest of a number of Dutch maps copied one from the other or printed from the same plate after various alterations. The view of New Amsterdam is next to the oldest known. Staaten Eyl. and Rivier Achter Kol appear on the map.)

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No. 6. MAP IN BESCHRYVINGE VAN NIEUW NEDERLANDT. ADRIAN VANDER DONCK, T'AMSTELDAM, 1656.

This is generally considered a copy of part of map number 5. It is the best known of this series of maps, having been reproduced in many publications.

The Beschryvinge or description mentions Staten Island and Kill van Kull as follows:

"The before mentioned bay wherein Staten Island lies is the most famous because the East and North rivers empty therein; which are two fine rivers and will be further noticed hereafter. Besides these, there are several kills, inlets and creeks, some of which resemble small rivers, as the Raritan, Kill van Col, Neversinck, etc."

It also mentioned the watering place (shown on a map to be described later) in the following language:

"But the outward bound vessels usually stop at the watering place under Staten Island to lay in a sufficient supply of wood and water which are easily obtained at that place."

No. 7. MAP OF STATEN ISLAND AND NEW YORK HARBOR BEING AN INSET ON A LARGER MAP ENTITLED "A NEW MAP OF NEW ENGLAND, NEW YORK, NEW JARSEY, PENSILVANIA, MARYLAND AND VIRGINIA, BY PHILIP LEA, LONDON 1690?"

This is one of the earliest maps of Staten Island to show villages and settlements. It is a very considerable advance over the maps that preceded it, and appears to be the original upon which similar maps were based for nearly a century.

The date of this map is somewhat uncertain. The British Museum and the Congressional Library both estimate it at 1690. It was sold during quite a number of years, if we may judge by the different names printed on various copies as publisher and seller. The two copies in the Lenox Branch of the New York

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Public Library are thought to have been published in 1710 and 1725. Philip Lea the maker was a geographer of prominence in his day, and published quite a number of maps dating from 1655 to 1700.

This map shows Perth City, which was the name given to the present Perth Amboy in 1684. The map could not have been made before this date, neither could it have originated many years later, for the name of Perth was soon lost by joining with it the name of the point.

The proprietaries of Perth expected to make a great city and the Surveyor General wrote home in 1683 that "workmen are scarce and many of them base; if no help comes it will be long ere Amboy be built as London is."

The settlement Wels on the map probably refers to Philip Wells land which was surveyed in 1680. The villages of Old Towne and New Towne are shown, as well as the Billop property. Dover, which appears on quite a number of maps, probably all copied from this, seems to be an error, as no other evidence of a town of this name is to be found; possibly Stony Brook is intended.

The Hudson River here appears as Hudson's River and Achter Col has been changed to Attrual Bay.

No. 8. NEW YORK AND PERTH AMBOY HARBOR IN A MAP OF THE BRITISH EMPIRE IN NORTH AMERICA, BY HENRY POPPLE, LONDON, 1733.

This is taken from Popple's great map issued in 20 sheets under the patronage of the Lords of Trade. It seems to be original, having little in common with previous maps. Old errors have vanished and a peculiar one has been introduced; thus Billop on the previous map becomes Bill or Point on this.

It will be noticed that Staten Island is shown as a part of New Jersey.

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No. 9. A DRAUGHT OF NEW YORK FROM THE HOOK TO NEW YORK TOWN, BY MARK TIDDEMAN, IN THE ENGLISH PILOT: THE FOURTH BOOK, LONDON, 1742.

The volume from which this map was copied contains charts and sailing directions for the American coast and was used generally by navigators sailing in these waters. The English at this time were making great improvements in the art of navigation, and their charts were more complete and accurate than any others. The shore lines, soundings, etc., were no doubt the most accurate to be obtained at the time.

Several editions of the English Pilot: The Fourth Book, are available as follows:

1707 edition in Boston Athenæum. It does not contain this map.

1737 edition in Library of Congress. It contains a similar map without maker's name.

1742 edition in Library Am. Geog. Soc. which contains above map.

1758 edition in Library of Congress which contains above map.

1764 edition in New York Public Library which contains above map.

No. 10. BAYE ET PORT D'YORC, CAPITALE DE LA NOUVELLE YORC, IN BELLIN (JACQUES NICHOLAS) LE PETIT ATLAS MARITIME, PARIS 1764.

A map probably compiled from English sources, in fact its similarity, in parts, to maps numbered 7 and 9 is apparent.

It is presented here principally on account of the name it applies to Staten Island: "Isle d'Ambois autrefois Isle des États."

A ferry is clearly shown from Staten Island to Brooklyn and the roads and ferries indicated on the map, would make it appear that transit to New York was effected via Brooklyn.

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No. 11. A CHART OF THE MOUTH OF HUDSON'S RIVER FROM SANDY HOOK TO NEW YORK, IN JEFFERY'S (THOMAS) THE AMERICAN ATLAS, LONDON, 1776.

This map shows Staten Island just prior to the breaking out of the Revolution. It may be seen that considerable pains had been taken to safeguard the entrance of the increasing volume of shipping into New York Harbor, as witness the lighthouse on Sandy Hook, first lighted in 1763, and the two alarm beacons near Coney Island.

No. 12. PART OF SKETCH OF OPERATIONS OF HIS MAJESTIES FLEET AND ARMY UNDER THE COMMAND OF RIGHT ADMIRAL THE RIGHT HONORABLE LORD VISCOUNT HOWE AND GENERAL SIR WILLIAM HOWE, K.B., IN 1776, PUBLISHED ACCORDING TO ACT OF PARLIAMENT JANUARY 17, 1777, BY J. F. W. DES BARRES, ESQ., IN ATLANTIC NEPTUNE, VOL. 4.

This is an excellent military sketch made during the progress of the Revolution. The topographical features, hills, marshes, roads, and houses are shown with clearness.

In a later map by the same author in the Atlantic Neptune, a chart made for the use of the British Navy, published in 1779, is shown the eastern shore of Staten Island on a large scale with forts where Fort Wadsworth is now located as well as others on Pavilion Hill and Fort Hill.

No. 13. CHART AND PLAN OF THE HARBOUR OF NEW YORK. LONDON, J. BEW, 1781.

In Political Magazine, November, 1781.

This map is of great interest on account of the number of names that appear for the first time on Staten Island, and for its indication of localities in the vicinity of New York of prominence in the Revolution.

The shore line of Staten Island is evidently copied from map No. 9.

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No. 14. A NEW AND CORRECT MAP OF THE COUNTY OF RICHMOND MADE IN THE YEAR 1797. AGREEABLE TO AN ACT PASSED BY THE LEGISLATURE OF THE STATE OF NEW YORK PASSED THE 28TH DAY OF MARCH 1797. SCALE 40 CHAINS TO AN INCH.

This map of the County of Richmond was executed in compliance with the following legislative act:

Laws of New York, Twentieth Session
John Jay, Esq., Governor
Chap LIV.

"An act in addition to an act entitled an act for the further direction of the Commissions of the Land Office and for other purposes therein mentioned

Passed the 28th March 1797.

.....
.....
.....

And Whereas as it will be of great utility to have the divisions of this state into counties and towns accurately delineated on a general map thereof, which cannot be done without surveys still to be made of many of them, either wholly or in part; Therefore,

Be it further enacted That the Surveyor General shall cause to be surveyed and marked such or so much of the bounds of any of the counties in this state, as have not heretofore been surveyed and marked, and that it shall be the duty of the supervisors of each town in the counties of Suffolk, Queens, Kings, Richmond, Westchester, Orange, Ulster, Dutchess, Columbia, Albany and Saratoga, to cause an accurate map to be made of the town of which he is the supervisor, and for that purpose to cause so much of the outlines of such town to be surveyed as may be necessary in addition to the surveys heretofore made, and which have

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been or may otherwise be obtained, which map so made he shall on or before the first day of February next, cause to be delivered into the surveyor general's office."

.....

.....

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In the records of the County of Richmond are the following entries which probably refer to this map and its makers whose names do not appear thereon:

1797, Dec 14, Bernard Sprong, for making a map of the towns of Southfield and Westfield and surveying Smoking Point Road ..... £6. 6. 0.

Richard Conner for making a map of the towns of Castleton and Northfield and service of Clerk of Supervisors. £7. 2. 0.

This map is probably the first we have, made from a land survey. It differs very little in its dimensions from later maps of Staten Island made by the United States Coast and Geodetic Survey, and shows most of the roads and buildings in existence at the time it was made. The watering place[1] mentioned by Vander Donck in his Beschryvinge, 1655–6 as follows: "But the outward bound vessels usually stop at the watering place under Staten Island to lay in a sufficient supply of wood and water which are

[1] Director Stuyvesant in a letter to the directors in Holland, dated September 24, 1661, reports that certain persons are trying to influence the King of England to take Fort Amsterdam "by telling him that the West India Co. claims and holds this province by unlawful title because in 1623 King James had granted to the Company only a watering place on Staten Island and nothing more."

Moulton in his "History of the State of New York," 1826, says: "But the States it has been further affirmed caused an application to King James for license to erect huts for the accommodation of their fleets sailing during this period of public tranquillity to the West Indies—that the permission was granted, that the name of Staten Island or States Island arose from this incident."

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easily obtained at that place," is shown on this map and can be identified as at or near Arietta street, Tompkinsville.

The large elm tree standing at the foot of New Dorp lane for many years, and well known to mariners, is here represented in the manner which was common a century ago.

The flagstaff shown on this map at Fort Wadsworth was probably used until the introduction of the electric telegraph, for the same purpose as that set up more than a century and a half before in this vicinity, of which we have the following record in De Vries, Third Voyage to America and New Netherland:

"2d of November 1641: The same day Commander Kief asked me whether I would permit Malyn to go upon the point of Staten Island where the maize land lay, saying that he wished to let him plant it and that he would make a signal by raising a flag to make known at the fort whenever ships were in the bay, to which I have consented."

Shooters Island, shown on this map as Shutters Island, is mentioned in the journal of a voyage to New York and a tour in several of the American Colonies—1679–80 by Jaspar Dankers and Peter Sluyter as follows: "Having now the tide with us we tacked about and quickly passed by the Schutters island, lying in the mouth of a kil on the north side of the Kil Achter Kol. This island is so called because the Dutch when they first settled on the North River, were in the practice of coming here to shoot wild geese, which resorted there in great numbers."

"We sailed inside Schutters island although the passage is very small, and thus obtained the inrunning current; because the flood tide which came from Achter Kol, and that from the North River strike each other here and then shoot together in this kil."

The magnetic variation shown on this chart, 3° 45′ west, was taken at about the time when the magnetic needle pointed nearest to the true north. Since 1797 the needle has been steadily declining to the westward until its variation amounts to about 9° 30′ west at the present time.

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No. 15. A PART OF MAP OF THE COUNTRY THIRTY MILES ROUND THE CITY OF NEW YORK, DESIGNED AND DRAWN BY I. H. EDDY, NEW EDITION, REVISED AND CORRECTED BY W. HOOKER AND E. BLUNT, NEW YORK, 1828.

This map shows the New Ferry and Turnpike, now known as Richmond Turnpike, as well as many names which have since disappeared.

The twin lights at Navesink Highlands are shown on this map, and these Highlands are represented as being about 600 feet above the sea level. The highest point however is only 269 feet above the level of the sea, which is below a considerable area on Staten Island where the maximum height is 413 feet.

No. 16. MAP OF NEW YORK BAY AND HARBOUR AND THE ENVIRONS, SCALE 1/30000. UNITED STATES COAST SURVEY. WASHINGTON 1844–5.

This is one of the earliest if not the earliest map of Staten Island published by the United States Coast Survey.

The surveys for this map were executed between 1835 and 1840. It shows the roads, buildings, etc., of that time, but its chief value is due to the fact that it is the earliest map to show the shore line and the adjacent soundings with great accuracy. On this account the map is indispensable when making a study of the changes going on in the shore line, shoals, and channels. This map is in 6 sheets, 20 × 30 inches each.[1]

[1] Copies of the maps described in this article are now on exhibition in the Museum of the Staten Island Association of Arts and Sciences.

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A Day's Collecting on a Staten Island Indian Site[1]

By William T. Davis

For over two hundred years farming has been carried on on Staten Island, and it might be supposed that hardly any Indian implements could be discovered at this late day on the surface of the often plowed fields where the Indians had their village sites and grew their corn and pumpkins.

From this point of view the collection made at Mariners Harbor and Old Place becomes of interest as illustrating how much has been overlooked, and also as an incentive to further research by the hopeful archeologist. Mr. Alanson Skinner found the greater number of the implements exhibited, but fortune was kind to both of us.

Within less than twenty-five feet of the railroad station at Mariners Harbor, we found a very good mortar with worn depressions on both sides. This was brought home later as it was far too heavy to carry about, and it is remarkable that it had so long remained unobserved in its conspicuous position.

Near Western Avenue, where some trenches had been dug and the sand distributed on the surface, an axe with a groove all around, and a broken banner stone were discovered. In the adjoining plowed fields fourteen perfect arrow heads were found, as well as a few broken ones. In the same situation were discovered a skin scraper, a broken semilunar knife, a hammer stone, three sinker stones, one with a groove all around, and a pitted stone such as is often found but as to the use of which there has as yet been no very satisfactory explanation.

The broken semilunar knife is of particular interest from the fact that these implements are not often found so far south, the majority of the specimens discovered coming from New England

[1] Presented April 18, 1908.

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and northern New York. Stone knives of this form closely resemble the Ulu, or woman's knife of the Eskimo, and it is supposed that the pattern has been copied from them.

In addition to all of these implements fifty-two fragments of pottery were picked up, most of which are small and many much weathered.

From the foregoing it will be seen that these old fields are still interesting to the archeologist, and that there is a never failing crop of arrow heads, fragments of pottery, and other tokens to remind one of the copper colored Staten Islanders of several hundred years ago.

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A New Jersey Otter[1]

By William T. Davis

While at Newfoundland, N. J., in April, 1907, I was informed that after the water had been drawn off of Brown's Pond during the winter a dead otter, *Lutra canadensis,* had been found on the bank and that it still lay where discovered. The remains were found without difficulty, and though it had been much eaten by dogs and one leg was gone, the creature was nevertheless carried away and the head preserved. The cleaned skull shows the teeth to be considerably worn and decayed in places, which would seem to indicate considerable age.

The southeasterly side of Newfoundland Mountain is a precipice, and there are many massive fragments of rock that have fallen so as to lie partly in the waters of the present artificial pond, and there form a strong retreat for an otter where he could hardly be disturbed. It has, however, been pointed out by Mr. Samuel N. Rhoads in his Mammals of Pennsylvania and New Jersey that even in the tide-water creeks, when the otters do not have the advantage of such a rock retreat as described, they are far from exterminated, though owing to their nocturnal habits and extreme wariness they are seldom seen even by naturalists.

[1] Presented April 18, 1908.

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The Modern Museum[1]

By Charles Louis Pollard

The event to be celebrated on May 23 in the Borough Hall is one of great importance and significance, not only to the Association, but to the whole island community. The formal opening of Staten Island's first public museum marks the fruition of hopes which were entertained by the more sanguine members of the old Natural Science Association at the time of its foundation twenty-six years ago, but which for many years seemed destined to disappointment. We are indeed entering upon a new epoch in our history, and it is a wonderful opportunity that is presented to our grasp. I refer not merely to the educational possibilities of the new institution, or to the position it will undoubtedly assume as a center for both scientific and artistic interests. I mean the opportunity we have here to develop a museum which in proportion to its size shall take its proper place among the progressive modern museums of the country. And so, on the eve of our opening, it seems a fitting time to point out to members of the Association what the modern museum is, how it has developed, and what it accomplishes.

I do not propose to discuss the evolution of museums, as that subject has recently been treated in a masterful manner by our friend Mr. Lucas, of the Brooklyn Institute, in a small pamphlet which should be read by every one interested in this subject. He shows how three distinct types of collections have influenced the growth of our present-day institutions; the assemblage of curiosities and freaks such as were shown in Barnum's Museum and the old Boston Museum; the miscellaneous gatherings of private collectors, usually illustrating some special branch of science or art; and the systematic collections kept for study by various societies

[1] Presented May 16, 1908.

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like our own. With a little thought we can readily understand how unsuited are these types of museums, if such they may be called, to modern public needs. In the case of the first two, the idea was simply one of display. Any object of interest on account of its beauty, variety, or oddity was placed on exhibition; and three-legged chickens and four-leaved clovers might find a place by the side of a stamp collection, or a pebble on which George Washington trod. As for the specimens belonging to the learned societies, they were arranged in systematic series, labeled only with data of scientific interest, and the names were of course naturally unintelligible to the ordinary individual.

Even after our larger public institutions had been founded, the idea of objects for show or display was the prevailing one, and little thought was given to arrangement or labeling. The specimens—the actual objects—were considered the important thing, and curators vied with each other in obtaining large series. At the present time, conditions are very different; and I know whereof I speak when I make the assertion that in modern museum administration, almost without exception, the proper arrangement and labeling of exhibits is regarded as of paramount importance. If you have the means to acquire abundant material, so much the better; for if not required for exhibition it will bring in good return when invested in exchanges. But even when a museum is limited by circumstances as to means and scope, like our own, there is no reason why it should not hold a position of dignity and influence simply through the proper use of its resources.

A few concrete illustrations will serve to make this point more clear. As a school boy, I was a frequent visitor at one of our largest museums. Like most boys I had a strong interest in outdoor life and was passing through the collecting fever; so I used to spend hours wandering up and down the long aisles between the cases; but I have often wondered since how those collections impressed the average adult visitor.

The birds, for example, filled a large hall. They were ar-

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ranged systematically, as closely together as they could be placed, and without much regard to geographical distribution. Each specimen was perched comfortably on a nicely polished artificial pedestal. The label bore the scientific name, the locality, and the collector. That was all. Is it any wonder that most visitors, after running the eye over a case or two containing perhaps five hundred birds, passed wearily on to another hall?

Visit the same museum today, and enter the same department. The systematic collection is still there, it is true, for the benefit of students; but it contains only sufficient specimens to illustrate properly the various natural groups, and the lay visitor need not linger, for there are many more interesting features. In a number of box cases are shown the complete life histories of most of our eastern birds; the nest and the adults, and eggs, in their characteristic setting, with carefully modeled accessories; in a gallery above, even these groups are surpassed by the splendid examples installed during the past two years, contained in cases sufficiently large to include whole shrubs, trees, portions of a swamp, etc., the semicircular backgrounds being cleverly painted to give the impression of a wide panoramic view. Many rare and little known birds are shown; and the labels bear not merely the names, but contain a mass of interesting information about the bird. In yet another part of the hall is a series of cases showing the birds found around New York; these specimens are changed from time to time to correspond with the season. There are numerous other features of the exhibits which I cannot now take time to enumerate.

The policy of the modern museum is, therefore, to utilize the material at hand so that it may tell its own story and provide the proper seasoning of instruction to preserve the appetite of interest. Let me say here that the attitude of derision and sometimes of pitying contempt which is displayed by a portion of the public toward the museum curator as a man of science is distinctly unjust. He is often credited with a desire to emphasize technical matters, and is accused of ignorance as to the real needs

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of the public. As a matter of fact no museum administrator, however eminent as a scientist, has been successful unless he has recognized the fact that a museum must be conducted primarily for the benefit of the people, and has studied carefully the tastes and interests of his constituency. But it does not always follow that the people should be given all they ask for. That we have several yellow journals of wide circulation is no excuse for starting another; and if the curator cannot satisfy scientific requirements and at the same time make his exhibits interesting and instructive, he had better go out of the business. At the same time the public should realize that scientific study of the collections is essential to the man of science: they are the books from which he derives whatever knowledge he may possess; and so it is that every modern museum tries to acquire a study series of its own, specimens which are not necessarily for exhibition, but which may be essential to a proper arrangement of the display series. No contributor should therefore feel sensitive or hurt because his gift does not find a place in the public cases. It may be fulfilling a far more important use in the general study collection. A curator should never place a specimen on exhibition without asking himself the reason for it. If the object is merely attractive to look at, or if it does not illustrate some fact in nature, bear some relation to surrounding exhibits or possess some historical association, should it be displayed? The answer of the modern administrator is, no. The sound philosophy of this reasoning will be apparent when we consider how quickly the mind or the eye tires of looking at a series of objects merely because they are pretty. During the past year I have spent several days in the various museums listening to the comments of visitors. In nearly every instance in which a large collection of such objects were shown without labels of special interest, the visitor would look at the first examples rather closely, indulging in the usual adjectives; would pass more quickly by the next examples; and would ignore the rest of the collection. This is especially true of biological collections.

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In our own museum we are to a large extent free from this difficulty because the series of specimens are much smaller, and in most cases possess a local interest. But even here the material is to be so arranged that each object will provide its own excuse at once; it will take time and hard work to place our museum at the acme of its usefulness. Progress is the world's watchword just now; and there is no branch of knowledge in which progressive methods and modern ideals are more important than in the management of a public museum.

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Annual Address of the President of the Association[1]

By Howard R. Bayne

The year that closes at this meeting has been one of exceptional interest and encouragement.

In May, 1907, our membership numbered 146. We have now on our roll 308 members, of which 298 are active members, two are life members, two corresponding, two honorary, and four are patrons. Dr. Charles Conrad Abbott, of Trenton, N. J., author and naturalist, was elected corresponding member. The four patrons elected are Messrs. Arthur Hollick, James Chapin, Charles Louis Pollard, and Ignaz Matausch. This honor was conferred upon each of these gentlemen in recognition of the valuable donations presented by them to the museum and library amounting in the aggregate, upon a very moderate valuation, to over the sum of $1,000. The accessions during the year have approximated about 6,000 to the museum and 2,000 to the library.

On July 8, 1907, the Board of Estimate and Apportionment granted the application of our association for an appropriation of $4,000 to cover cost of exhibition cases and museum supplies. This sum became available on September 17, 1907. Plans and specifications had been prepared by Messrs. Carrère and Hastings, architects for the City of New York, and bids for construction were advertised for. The lowest bidder was the Siegel Cooper Co., to whom the contract was awarded at $1,798.48. The cases were delivered in April, 1908.

The museum and library were transferred in July, 1907, from the room at the Staten Island Academy, where they had been stored for a number of years, to the room in the Borough Hall, which had been assigned to the use of the Association for the

[1] Presented May 16, 1908.

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purpose of public exhibition by the president of the borough, Hon. George Cromwell, under the resolution of the Sinking Fund Commissioners of the City of New York. As soon as the cases were available, steps were taken to classify and arrange the museum for public exhibition.

On June 17, 1907, Mr. Charles Louis Pollard, formerly of the U. S. National Museum at Washington, was appointed curator by the Board of Trustees, and immediately entered upon his duties. The work of installing and arranging the museum specimens and the library has been accomplished by the curator with an organized staff of active members of the Association, as set forth in the report of the Board of Trustees. Other members have also rendered active assistance. To all of these gentlemen the Association is indebted for most skillful, valuable, and useful service.

In spite of the limited time at our disposal we may confidently expect a creditable showing of the museum on May 23, the date set for the public opening.

The annual prize bestowed by the Association for work in natural science, open to pupils in the Curtis High School, was awarded last June to Mr. Harold Ludlow, for the best collection of not less than fifty native and introduced wild plants of Richmond County. The prize this year will be awarded for the best collection of not less than 100 specimens of Staten Island insects, including at least fifty species and four orders. The interest which these prizes have aroused is highly satisfactory and the results attained indicate an encouraging advance in special study and accurate investigation in natural science. As soon as the funds are available similar prizes should be offered in other schools as incentives to the study of nature.

Along the line of enlarging the scope of the Association was the adoption of a new bylaw authorizing the formation of sections by the members for the discussion and study of special subjects. Under this bylaw any five or more members may with the approval of the Board of Trustees organize a section, select their

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own chairman and recorder, and hold meetings at such times and places as they please. This affords opportunity for meetings and discussion in any subject within the broad scope of the Association's corporate purposes.

To the Women's Auxiliary Committee we are greatly obliged for conducting most successfully a number of social reunions of the members of the Association and their friends during the year. These gatherings have been uniformly enjoyable, and it is a matter of great regret that the local habitation of the Association is so limited as to make it difficult to accommodate our increasing membership on such occasions.

And this leads me to express the hope that the day is not far distant when the quarters of the Association will be adequate to its needs and to the dignity and worth of its ambitions. The growth of the museum has far outstripped its present facilities. We have thousands of specimens which cannot be exhibited because we have not space for them. The library has also grown beyond expectation, and will soon transcend the limit of space allotted to it.

These facts point to the inevitable necessity for larger accommodation. Just how and when these will be supplied we may not now undertake to forecast. But my confidence in the loyalty and serious purpose of the Association and the splendid zeal and fidelity and ability of my associates in the administration of our affairs, leave no doubt in my mind, at least, that in due time we shall have quite nearly all that we need.

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Literature Relating to Staten Island

Araucariopitys, a New Genus of Araucarians[1]

From a study of remains obtained from the Cretaceous Staten Island deposits of the Androvette pit at Kreischerville the author bases a new genus and species, which is described and illustrated under the name *Araucariopitys americana.* The internal structure, which is well shown in the photomicrographic sections, clearly indicates araucarian affinities, but with certain characters that suggest abietinous alliances. The conclusion reached is that the genus represents an extinct type, transitional between the Abietineæ and Araucarineæ and indicating the derivation of the latter from the former.

In his concluding discussion, on p. 442, the author refers in an important connection, to "the most archaic structurally known abietinous type, *Prepinus,*" but unfortunately fails to cite any authority for the name or its place of publication.

A. H.

On the Structure of the Leaf in Cretaceous Pines[2]

This contribution consists of descriptions and discussions of specimens of Pinaceae collected in the Cretaceous clays of Staten Island at Kreischerville, together with convincing reproductions of enlarged photographs, showing exterior characters, and photomicrographs of sections showing interior structure.

A new genus, *Prepinus,* is proposed for a peculiar type, represented by short deciduous shoots, bearing numerous spirally arranged leaves, enclosed in a sheath composed of nondeciduous scales. A new species, *P. statenensis,* is described, and its structural characters discussed in connection with their significance

[1] By E. C. Jeffrey. *Bot. Gaz.*, **44**: 435–444, *pls. 28–30.* 1907.
[2] By E. C. Jeffrey. *Annals Bot.* **22**: 207–220, *pls. 13, 14.* 1908.

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from the evolutionary standpoint, and is illustrated by the figures on plate 13.

Several new types of the genus *Pinus* are also described, one of which is distinguished as *P. triphylla* in the explanation of figure 17 on plate 14, and is therefore presumably to be considered and cited as a new species, under that name.

The illustrations are excellent and the author's discussions and interpretations of the facts of internal structure which they show, add much that is both new and interesting in relation to the antiquity and ancestry of the Abietineæ and the genus *Pinus;* but, unfortunately, the scientific value of the contribution is seriously marred by the lack of orderly sequence in the arrangement of descriptions, discussions, names, and references in the text, and by the careless or erroneous citations of authorities.

A. H.

NEW FERNS DESCRIBED AS HYBRIDS IN THE GENUS DRYOPTERIS[2]

The recent activity in the study of hybrids, both plant and animal, has received a notable contribution in this paper by Dr. Dowell, and it is of special interest to us, not only as coming from one of our own members but also for the reason that the material upon which it is based was largely obtained from Staten Island.

Six hybrids are recognized as referable to the genus *Dryopteris*, in which the species *cristata, spinulosa, intermedia, clintoniana, goldiana,* and *marginalis* are concerned. Three of these are described as forms not heretofore recognized, viz., *D. clintoniana* × *intermedia, D. goldiana* × *intermedia,* and *D. goldiana* × *marginalis,* and two now regarded as hybrids were previously classed as species or varieties, viz., *D. cristata* × *intermedia* = *D. boottii* (Tuck.) Und. and *D. clintoniana* × *goldiana* = *D. goldiana celsa* Palmer. The remaining one is *D. cristata* × *spinulosa* (Milde) C. Chr.

The several characteristics are clearly described and the facts

[2] By Philip Dowell. *Bull. Torrey Club* 35: 135–140. 1908.

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in regard to propinquity, environment, etc., are such that but little discussion seems necessary in order to defend the theory of hybridity in connection with these ferns.

A. H.

NASH'S HISTORIC RICHMOND[4]

Staten Island is fortunate in having many old buildings and sites of historic interest, and the present pamphlet is intended to point these out. One is conducted from place to place in our island, and a numbered paragraph corresponding to a like number on the map is devoted to each old home or fort or cemetery. One hundred and thirteen places are mentioned. Under "No. 1, Borough Hall," the room of the Staten Island Association of Arts and Sciences is referred to, where the only milestone known to exist on the island is preserved. A note on page 24 is of much interest as an expression of opinion on the early settlement of the Island and the Rapaelje family.

W. T. D.

THE STATEN ISLAND MUSEUM AS AN AID TO SCHOOL WORK[5]

In this article the author calls attention to the progressive growth of museums and to differences between the older type of museums and the more modern museum. He states that the aim of the Staten Island museum is to make the exhibits such that they may tell their own story and have a sustained interest and at the same time prove instructive. These points are clearly discussed and aptly illustrated by concrete examples. The article should make a strong appeal to intelligent pupils to visit the museum and see the interesting and instructive exhibits.

PH. D.

[4] Excursion planned for the City History Club of New York. No. X, Historic Richmond. By Geo. N. Nash, M.D. Published by the City History Club of New York. 1908. 8vo, pamph., pp. 24, with map.

[5] By Charles L. Pollard, Curtis High School Monthly 3: 10–11. 1908

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Records of Meetings

Regular Meeting, February 15, 1908

The meeting was held in room 309, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About eighty members and guests were present.

In the absence of the recording secretary Mr. Charles L. Pollard was elected secretary *pro tem.*

The minutes of the meeting of January 18, 1908, were read and approved.

The following were elected to active membership: Mrs. Clare Herbert Brown, George H. Downing, Miss Anna G. Du Bois, Miss Mary W. Green, Mrs. Anton W. Hoffmeyer, Miss Rebecca M. Ludlum, Mrs. Charles Knight.

Scientific Program

Mr. David M. Van Name read a paper on the history of the cultivation of the *Dahlia.*

Mr. William T. Davis exhibited preserved specimens of New Jersey amphibians and reptiles, with notes on the same, in connection with a review of the *Annual Report of the New Jersey State Museum* for 1906. (Printed in full in this issue, p. 47.)

Mr. Davis read also, on behalf of Mr. Alanson Skinner, a paper describing the massacre of the Lenapé Indians, in 1643, under the Dutch Director, Kieft. (Printed in full in this issue, p. 53.)

Mr. James Chapin exhibited a skin of Wilson's petrel or "Mother Carey's Chickens," and read notes on its appearance in the vicinity of Staten Island. (Printed in full in this issue, p. 58.)

Mr. Lloyd M. Bayne read a note on a case of involuntary suicide by a barn swallow. (Printed in full in this issue, p. 62.)

Mr. Ira K. Morris presented a map of Staten Island, hand made, obtained through Miss Lyon, of Rossville. The following memorandum is written on the back: "1864. I found this paper today among large masses & as it shows how Master Leeds Kerr's gt. gt. gt. grandfather used to study out the questions of his day, sketching maps for himself, I throw it into the trunk marked W. L., being his gt. gt. gt grandfather's trunk.

William Leeds, Edward Leeds, Hon. John Leeds, John Bozeman & Lucretia (Leeds) Bozeman, daughter of last named, Rachel Leeds Kerr, wife of David Kerr, Esq. of Talbot Co., Md. & John Leeds Bozeman, children of J. & Lucretia Bozeman. John Leeds Kerr, John Bozeman Kerr, Master Leeds C. Kerr.

1627–29–75."

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The general outlines of Staten Island are fairly well indicated, but many of the old settlements are placed considerably out of their correct locations. Apparently, also, additions were made to the map several years after it was first commenced.

A considerable portion of the surrounding land and waters is included, and it is interesting to note that Ellis Island is called "Green Island" and Bedloe is designated "Red Cross Island." A third island, apparently where the lighthouse is now located, is marked "Oyster Island."

If the memoranda are authentic this is probably the oldest map of Staten Island extant, and constitutes an exceedingly interesting historical relic.

Mr. Howard H. Cleaves exhibited an enlarged photograph of a gray screech owl, *Megascops asio* (Linn.), taken on November 27, 1907.

The meeting then adjourned.

REGULAR MEETING, MARCH 21, 1908

The meeting was held in the reading room of the New York Public Library at St. George.

President Howard R. Bayne in the chair.

About seventy members and guests were present.

In the absence of the recording secretary, Mr. Charles L. Pollard was elected secretary *pro tem.*

The minutes of the meeting of February 15, 1908, were read and approved.

The following were elected to active membership: E. Howe Bennett, Z. James Chadbourne, John F. Kraft, Amzi T. Rogers, DuBois Tooker.

The president announced the death of Mr. Leonard Joseph Busby, who was elected to active membership in the Association on October 17, 1907. Mr. Busby was prominent in business circles in Brooklyn and Manhattan and had been for many years a partner in the firm of Holt and Co. He was pleased to assist in supporting and encouraging the Association by maintaining his membership although not taking an active part in our proceedings. The secretary was instructed to transmit a suitable letter of regret and sympathy to the family of the deceased.

Mr. E. C. Delavan offered an amendment to Bylaw VIII, in regard to method of procedure, etc.

Under the provisions of Bylaw VII this proposed amendment went over until the next meeting of the Association.

Mr. John Rader called attention to certain proposed amendments to the game laws, now before the New York State Legislature. After discussion it was

Resolved, that this Association cordially indorses the recommendations of the National Association of Audubon Societies with respect to the bills now pending in the Legislature amending the State game laws, popularly known as the Cobb Mills bills; and that it urges the representatives from Richmond County to vote for the amendments approved by the said

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Society and enumerated in the brief published by the latter under date of March, 1908, and prepared by William Dutcher, president of said Society.

Resolved, that a copy of this resolution be transmitted to the Hon. Charles E. Hughes, Governor; to the Hon. Dennis J. Harte, Senator for the 2nd District; and to Hon. William Allaire Shortt, Assemblyman for the County of Richmond.

SCIENTIFIC PROGRAM

Mr. Ira K. Morris presented an old framed document, the certificate of honorable discharge of John Britton, private in Captain Richard S. Cary's Troop of Richmond Cavalry of the County of Richmond, from the service of the United States, dated December 2, 1814, and made some comments on the same. (Printed in full in the *Staten Islander*, March 25, 1908.)

Mr. William W. Bryan presented two original instruments, one a Pennsylvania land grant of 1795 and the other a deed to land in the same state, dated 1839.

Mr. William T. Davis exhibited a panoramic photograph of the Billop House at Tottenville.

Mr. Davis also read a short paper on the high-bush blueberries (*Vaccinium corymbosum* and *V. atrococcum*) found on Staten Island. (Printed in full in this issue, p. 63.)

Mr. Alanson Skinner gave a description of the implements, utensils, costumes, etc., of Iroquois workmanship included in the collection now on display in the branch public library at St. George.

Mr. Skinner also presented an old photograph of the frigate New Orleans, one of the U. S. navy vessels in the war of 1812.

Mr. F. W. Skinner commented upon certain of its features of construction.

Mr. James Chapin exhibited specimens and read notes on the species of mice and shrews known to occur on Staten Island. (Printed in full in this issue, p. 65.)

Mr. Chapin read also a paper giving records of the local occurrence of the coot (*Fulica americana* Gmel.). (Printed in full in this issue, p. 68.)

The meeting then adjourned.

REGULAR MEETING, APRIL 18, 1908

The meeting was held at the Staten Island Academy, New Brighton. Vice-President William T. Davis in the chair.

In the absence of the recording secretary Mr. Charles L. Pollard was elected secretary *pro tem.*

The minutes of the meeting of March 21, 1908, were read and approved as amended.

The following were elected to active membership: Mrs. Lester W. Clark, Mrs. Herbert Crabtree, Miss F. E. C. Nichols, Miss Harriet Slator, Mrs. Arthur Sloan, Mrs. Wilbur W. Whitford.

The chairman announced the death, on April 15, of Mr. George S.

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Scofield, a member of the first Board of Trustees, and a member of the Natural Science Association of Staten Island since 1902.

The following amendment to the bylaws, proposed at the last meeting of the Association, was adopted:

VIII. GENERAL PROVISIONS

All procedure and business of the Association not fixed by the Constitution or Bylaws shall be determined by the Board of Trustees, and all questions of parliamentary order and procedure not specially provided for by the Bylaws shall be governed by [Cushing's Manual] *Roberts' Rules of Order.*

The curator-in-chief announced that the museum cases had been received and placed in position; that the installation of specimens was under way, and that the museum would probably be ready for opening some time in May.

Mr. Charles L. Pollard proposed various amendments to the Constitution and Bylaws which went over until the next meeting of the Association.

SCIENTIFIC PROGRAM

Mr. David M. Van Name read a paper on "Trees," discussing them from their structural and economic standpoints and concluding with a plea for the preservation of our forests.

Mr. George W. Tuttle presented a series of photographic reproductions of early maps of Staten Island and of New York City and vicinity, with explanatory notes. (Printed in full in this issue, p. 70.)

Mr. William T. Davis and Mr. Alanson Skinner gave a series of memoranda on a collection of Indian stone implements found in one day in the vicinity of Mariners Harbor. (Printed in full in this issue, p. 88.)

Mr. Davis also exhibited the skull of an otter, *Lutra canadensis*, which was found near Newfoundland, N. J., and commented on the scarcity of the animal. (Printed in full in this issue, p. 90.)

The meeting then adjourned.

ANNUAL MEETING, May 16, 1908

The meeting was held at the Staten Island Academy, New Brighton.

President Howard R. Bayne in the chair.

About forty-five members and guests were present.

The minutes of the meeting of April 18, 1908, were read and approved.

The annual reports of the Board of Trustees and the Officers of the Association were read and ordered placed on file. (See pp. 107–114):

The president stated that the next order of business was the election of four trustees to fill the vacancies caused by the expiration of the terms of office of Philip Dowell, John Blake Hillyer, George Scranton

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Humphrey, and William Hinman Mitchill, and called for the report of the committee on nominations.

The committee submitted the names of the present incumbents. The president asked if there were any other nominations and none others being made the secretary was instructed to cast one affirmative ballot for nominees submitted by the committee.

The secretary cast the ballot as instructed and the president declared Philip Dowell, John Blake Hillyer, George Scranton Humphrey, and William Hinman Mitchill to be elected trustees of the Association for the ensuing three years.

The following were elected to active membership: Philip H. Cassidy, George A. Clapp, Mrs. George A. Clapp, Guy Carleton Dempsey, Mrs. Charles A. Ingalls, Captain Andrew J. Newbury, George J. Turnbull.

The proposed amendments to the Constitution and Bylaws, submitted at the last meeting, were read, discussed, and adopted, as follows:

In Article II of the Constitution omit the words "corresponding secretary."

In Article I, Section 2, and in Article IV, Section 3 of the Bylaws, omit the word "recording."

Strike out Section 4 of Article IV, and renumber the remaining sections accordingly.

Add the following new bylaw:

VIII. SECTIONS

Any five or more members of the Association may at any time, with the approval of the Board of Trustees, organize a section for the study or exploitation of special topics within the scope of the Association. Such sections may hold meetings at their convenience, choose such officers as they may deem necessary, and transact business incident to the objects for which they are organized; but they shall incur no expense and assume no responsibility in the name of the Association except as specifically authorized by the Board of Trustees. Membership in the sections shall be limited to members of the Association, and any member shall be entitled to membership in any of the sections.

Change the numbering of the present Bylaw VIII to IX.

The curator-in-chief read an address on "The Modern Museum." (Printed in full in this issue, p. 91.)

The president then delivered his annual address. (Printed in full in this issue, p. 96.)

The meeting then adjourned.

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Annual Reports

Report of the Board of Trustees

To the Staten Island Association of Arts and Sciences

Ladies and Gentlemen: Your Board of Trustees begs leave to report as follows for the year 1907–08:

The Board held ten meetings, as follows: the annual meeting, on May 25, 1907; stated meetings on October 5, 1907, January 4, and April 9, 1908, and special meetings on June 15, September 18, October 28, and December 17, 1907, and February 18 and May 4, 1908.

At the annual meeting officers of the Association were elected in conformity with the provision of Article II of the Constitution.

One vacancy in the Board, caused by the resignation of Captain Daniel Delehanty, was filled by the selection of Samuel McKee Smith.

Four patrons were elected, in conformity with the provisions of Section 6 of Bylaw III, as follows:

Arthur Hollick, Charles Louis Pollard, James Chapin, Ignaz Matausch.

Each one donated specimens to the museum and library valued at more than $200 and aggregating probably not less than $1,000.

One corresponding member, Charles Conrad Abbott, M.D., of Trenton, N. J., was elected.

The material included in the museum and library was removed from the Staten Island Academy and installed in the room assigned for the purpose by the city, on the third floor of Borough Hall, during the early part of last July.

An appropriation of $4,000 was subsequently obtained from the city for the furnishing and equipment of the museum and library. By means of this appropriation fourteen table cases and nine upright cases were constructed in accordance with our plans and specifications, prepared in consultation with the city architects, Messrs. Carrère and Hastings, and all supplies necessary for the prosecution of work in the museum and library were provided.

Charles Louis Pollard, M.A., formerly of the United States National Museum, was appointed curator on June 17, 1907, and a museum and library staff was subsequently organized, to have general charge of the arrangement of the museum and library, as follows:

Curator-in-chief.

Charles Louis Pollard

Department of Zoölogy	Department of Botany
William Thompson Davis, *Honorary Curator*	Philip Dowell, *Honorary Curator*
James Chapin, *Honorary Assistant*	

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DEPARTMENT OF ANTHROPOLOGY AND ARCHEOLOGY
Alanson Skinner, *Honorary Curator*

DEPARTMENT OF GEOLOGY, MINERALOGY, AND PALEONTOLOGY
Arthur Hollick, *Honorary Curator*

DEPARTMENT OF ARTS AND ANTIQUITIES
Committee in charge

DEPARTMENT OF BOOKS
The Curator-in-chief temporarily in charge

The work of arranging the collections systematically and for display has been diligently prosecuted and the museum will be formally opened to the public Saturday afternoon, May 23, with appropriate exercises, due notice of which will be mailed to all of the members. In order to expedite this work and insure the opening on the date determined, a museum assistant, Mr. Harold Nelson, has been temporarily employed. Details in regard to museum and library work, accessions, etc., are included in the appended report of the curator-in-chief. The expenses incurred in putting the museum into shape for formal opening have been met by means of a fund of $145 subscribed by Charles W. Hunt, William T. Davis, William G. Willcox, Walter C. Kerr, Thomas Craig, Daniel S. Hage, Ernest Flagg, and T. Livingstone Kennedy.

Earnest efforts were made to increase the membership of the Association, by means of circulars describing its objects, aims, and needs, with the result that the membership has more than doubled since the last annual meeting. In this connection the Women's Auxiliary Committee has rendered valuable service and assistance.

In response to a request from the head librarian of the branch public library at St. George, to install there a suitable exhibit on the occasion of the opening of the library, the curator-in-chief was authorized to proceed in the matter at his discretion. The installation was accomplished and the display proved to be of such interest to the patrons of the library that it led to a similar request from the Stapleton library and an exhibit was installed there also. These exhibits yet remain in their respective locations and are constant reminders to the public of our aims and activities.

The routine business of the Association was promptly and systematically transacted by the officers of the Association and by the standing committees provided for under the rules and regulations of the Board. Reports of these committees are appended and the reports of the secretary and of the treasurer will be submitted later. Details of the administrative affairs of the Association are set forth in these reports and will receive further mention and explanation by the president, in his annual address.

Submitted on behalf of the Board,

ARTHUR HOLLICK,
Secretary

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REPORT OF THE EXECUTIVE COMMITTEE

TO THE BOARD OF TRUSTEES,
STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

Gentlemen: Your Executive Committee respectfully submits the following report for the year 1907–08:

The committee met whenever necessary and transacted all items of business referred to it for determination by the Board. Conferences were also held by subcommittees of the committee.

The business transacted consisted largely of the preparation of plans, specifications, etc., in connection with the transfer, installation, furnishing, equipment, and care of the property of the Association in the quarters assigned for the museum and library in Borough Hall, and in personal conferences with the several city officials—the Comptroller, Corporation Counsel, President of the Board of Aldermen, President of the Borough of Richmond—and in appearances by individual members of the committee before the Board of Estimate and Apportionment and our local Board of Improvements.

HOWARD R. BAYNE, *Chairman*
WILLIAM H. MITCHILL
GEORGE S. HUMPHREY
CHARLES A. INGALLS
ARTHUR HOLLICK, *Secretary*

REPORT OF THE AUDITING COMMITTEE

TO THE BOARD OF TRUSTEES,
STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

Gentlemen: Your committee respectfully reports that it has examined the treasurer's annual report for the fiscal year ending May 25, 1907, and also the reports submitted at the stated meetings of the Board held on January 4 and April 9, 1908, together with the accompanying books and vouchers, and found the same to be correct in all particulars.

A change in the personnel of the committee occurred in the early part of 1908 by reason of the selection by the Board of one of the members of the committee, Mr. Charles A. Ingalls, to act as treasurer in place of Mr. J. Blake Hillyer, resigned.

GEORGE S. HUMPHREY, *Chairman*
CHARLES A. INGALLS (May, 1907–January, 1908)
STAFFORD C. EDWARDS (January–April, 1908)

REPORT OF THE PUBLICATION COMMITTEE

TO THE BOARD OF TRUSTEES,
STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

Gentlemen: Your committee respectfully reports as follows for the year 1907–08:

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The following publications have been issued since the last annual meeting:

PROCEEDINGS, VOL. I, Part IV (January to May, 1907, inclusive), pp. 93–136, pl. III. Issued September 20, 1907. Edition 500 copies.

Ibid., Vol. I, title page and table of contents, pp. I–V, and index, pp. 137–150. Edition 500 copies.

A circular, in leaflet form, containing a complete list of the publications of the Association and the conditions under which they are distributed and sold.

Copy for Part I, Vol. II, of the PROCEEDINGS has been prepared for publication and arrangements have been made for its early issue. This will include the records of the meetings from October 19, 1907, to January 18, 1908, inclusive.

PHILIP DOWELL, *Chairman*
WILLIAM T. DAVIS
ARTHUR HOLLICK

REPORT OF THE CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,
STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES,

I have the honor to submit herewith my first annual report as curator-in-chief of the Association, covering the period from July 1, 1907, the date of commencement of museum records, to May 16, 1908, the close of our fiscal year.

THE MUSEUM

A brief recapitulation of the events of the past year, in so far as they relate to the development of the museum, may be of interest.

Immediately after my appointment as your curator on June 15, 1907, I made a thorough inventory of the collections belonging to the Association, then stored in a room at the Staten Island Academy. The inventory was submitted to the Executive Committee on June 19, 1907, together with a report outlining the chief requirements in the matter of additional specimens and of supplies, and indicating the more important lines of work to be undertaken.

On July 10 the removal of the collections from the Academy to room 309, Borough Hall, was begun, and the transfer occupied the most of three days, during which time Dr. Arthur Hollick very kindly assisted me in the work. A portion of the room was occupied by draughtsmen attached to the office of the Chief Engineer of the Borough, so a temporary partition was erected separating the easternmost half of the room for our use.

The next few months were largely occupied in rearranging the various collections, in checking up the periodicals in the library with a view to securing missing numbers whenever possible, and in preparing detailed plans for exhibits. On December 26 a letter was addressed to President

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Cromwell setting forth the urgent need of the Association for the whole of room 309, originally assigned to our use by the president of the borough under authority of the Commissioners of the Sinking Fund, and requesting him to place us in full possession on January 15, 1908, if possible. On the latter date the room was accordingly vacated and the temporary partition removed. Throughout this period the collections were accessible to members of the Association, though the general public was not admitted.

With the delivery of the exhibition cases early in the spring it was possible to make a permanent disposal of our furniture, etc., which was done according to a plan approved by the Board on September 18, 1907. In order to provide an office and workroom for the museum staff, a light but firm partition has been erected at the east end of the room, leaving a space approximately 25 by 75 feet for a museum room, with two doors opening into the corridor.

EXHIBITION CASES AND OTHER FURNITURE

With the proceeds of the bond issue of $4,000 authorized by the city of New York for furnishing and equipping the museum, 14 table cases and 9 glass upright cases have been provided for the exhibits, and one 14-drawer table case for storage. Four additional glass-top table cases already belonging to the Association have also been utilized for exhibits. The drawings and specifications were made by Carrère and Hastings under the supervision of the curator-in-chief, from designs by Dr. Arthur Hollick. The contract for their construction was awarded to the Siegel Cooper Co. for $1,798.48.

The table cases are 2½ by 5 ft., with level glass tops 6 in. deep, painted white within, and having two drawers beneath. The uprights are 6 ft. high and 1 ft. deep, with half-inch plate glass shelves supported on key-hole brackets. The woodwork is quartered oak with weathered finish.

The remainder of the appropriation was utilized in the purchase of a desk, typewriter, chairs and other office furniture; alcohol and other preservatives; glass jars for storage and exhibition; library cards and stationery; and miscellaneous museum supplies. The various expenditures have been itemized in previous reports to the Board of Trustees.

MUSEUM ORGANIZATION

On April 9 the organization of a museum staff was approved by the Board and appointments were made as stated in the annual report of the Board (see p. 107).

On May 1 Mr. Harold Nelson was appointed museum assistant for a temporary period of one month, and has been engaged since that date in duties incidental to the public opening of the museum.

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ACCESSIONS

The accession record was begun on July 1, 1907.

The total number of accessions has been 58, divided as follows: exchange, 1; collected for museum, 6; gifts, 51. The number of separate individuals or institutions to whom these accessions are accredited is 31.

On account of the fact that some accessions could only be estimated and not accurately counted, the total number cannot be given exactly, but it approximates 8,000. The following table gives the distribution of accessions among the separate departments:

Minerals, geological specimens	about 1,125
Fossils	18
Plants	about 3,000
Birds	206
Birds' eggs and nests	503
Mammals	3
Indian implements	13
Marine invertebrates, as shells, corals, etc	about 550
Reptiles	60
Insects	195
Drawings, maps, manuscripts	136
Books	261
Pamphlets, newspapers	1,958
Relics, curios	34
Miscellaneous implements, cases, labels, tools, etc	estimated 100

THE OPENING OF THE MUSEUM

Preparations are nearly completed for the opening of the museum to the public on May 23, the date fixed by the Board. On account of the limited time at our disposal it will be necessary to install some temporary exhibits, but it is believed that the cases in general will present a satisfactory appearance. The Art Committee has kindly furnished for the occasion a valuable loan exhibit of antique china, brass, pewter, and copper ware, and numerous colonial relics. The James Chapin collection of Staten Island birds, recently donated, and the minerals of the Frederick Hollick collection, will be displayed for the first time.

When this important step is taken, and adequate funds secured for the maintenance of the museum as a public institution, the Association may indeed look forward to a career of even greater usefulness and importance in the community.

Respectfully submitted,
CHARLES LOUIS POLLARD,
Curator-in-chief

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ANNUAL REPORT OF THE RECORDING SECRETARY

May 16, 1908

MEMBERSHIP

Membership at date of last annual report:

Active	141	
Life	2	
Honorary	2	
Corresponding	1	
		146
Since elected:		
Active	172	
Corresponding	1	
Patron	1	
		174
		320
Resigned	7	
Deceased	3	
Dropped from roll	1	
Declined election	1	
		12
On roll at date		308

This now includes 298 active, 2 life, 2 honorary, and 2 corresponding members, and 4 patrons. In the latter class one was elected without having been previously a member, and three were elected from among the active members of the Association.

MEETINGS

Eight regular meetings, including the annual meeting, were held in accordance with the provisions of the bylaws. One was held at the residence of the President, one in the reading room of the branch public library at St. George, one in the museum room in Borough Hall and five at the Staten Island Academy.

The total attendance was approximately 400, or an average of 50 at each meeting, including members and guests.

During the absence of the secretary in February, March, and April, the duties of the position were performed by the curator-in-chief, who was appointed acting recording secretary by the Board of Trustees for that period.

ARTHUR HOLLICK,
Recording Secretary

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ANNUAL REPORT OF THE TREASURER

Debit and Credit Account

Dr.

Balance in hand at date of last annual report		$536.69
Since received:		
Dues	$786.50	
Note	100.00	
Subscriptions to special museum fund	145.00	
Subscriptions to entertainment fund	50.00	
Subscriptions to and sales of PROCEEDINGS	28.75	
Interest	13.00	$1,123.25
Total		$1,659.94

Cr.

Paid for printing of circulars, stationery and postage	$172.18	
Paid for printing PROCEEDINGS	140.65	
Paid for museum and library supplies	100.08	
Paid for expenses of moving museum and library	55.95	
Paid for expenses of entertainment commitee	52.96	
Paid for insurance	25.00	
Paid for prize in natural science	10.00	
Paid for premium of treasurer's bond	5.00	
Paid for back numbers of serials	2.85	
Paid for discount on note	1.50	
Paid for salaries of curator-in-chief and assistant	904.20	
Total		$1,470.37
Balance in hand		189.57

CHARLES ARTHUR INGALLS,
Treasurer

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Exercises held in Connection with the Opening of the Museum to the Public

MAY 23, 1908

The Museum of the Staten Island Association of Arts and Sciences was formally opened to the public on the afternoon of May 23, 1908.

About 100 members and guests were present.

President Howard R. Bayne delivered an address of welcome to those in attendance and accepted as a trust, on behalf of the Association, the dedication of the museum to the use and for the benefit of the public, and introduced Hon. George Cromwell, President of the Borough of Richmond, who delivered the following address in reply, on behalf of the people of the Borough:

Mr. President, Ladies and Gentlemen:

In speaking here this afternoon for the Borough of Richmond, I am addressing in you, Mr. President, a man who holds an office much older than my own, for the Association of Arts and Sciences is an older organization than the borough. Not only does your splendid and complete collection of geological specimens impress upon us the antiquity of Staten Island, but your Association, under a different name, antedates our consolidation with the City of New York, and is today a living and convincing evidence of what things in the way of study and research and education Staten Islanders were able to accomplish by themselves before the ægis of the metropolis was extended over our towns and villages and institutions. We still are, and always will be, autonomous in our initiation and perfection of special works and organizations peculiar to this community and of permanent value to it, of which the Association of Arts and Sciences is a brilliant example; and I devoutly hope that the day will never come when our autonomy

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in any respect will be lessened and we be treated as if we were incapable of taking care of ourselves.

This Association is a fair criterion of our citizenship—of the public spirit and devotion to Staten Island which characterize the men who make the Borough of Richmond what it is. Professional men, scientific men, business men, have given time and thought, and sometimes much hard work, for more than a quarter of a century past, without any sort of material reward or any chance of it, to the investigation of the flora and fauna and geological structure of Staten Island. This is the kind of thing that shows the stuff we are made of, quite aside from our daily tasks and ambitions.

The results we see today. The geological exhibit, I believe, is practically complete. So, I think, is the collection of flora. Of the animal life of the Island there is probably more to be learned, or at least more to be shown; but the most interesting history and progress and growth of the Association, as related to us by its president, is a sure guarantee that in the years to come this fascinating and gradual labor of love will continue until we shall have a museum of natural history and scientific records of our Island which will rival in character and value any similar institution in the world.

The educational value of such an association as this, so admirably ordered and conducted, is truly vast and far reaching, and the establishment of its collections at St. George, where, after considerable time and effort, we were able to obtain for it this room in the borough hall, makes them easily accessible from all parts of the Island, and places them where they can be of the greatest utility, in proximity to our largest and most advanced schools and to the largest of our public libraries. To students and readers the best illustrations of their texts are not found in engraved pages but in the actual objects of interest as seen and perhaps handled. The universal acceptance of this practical side of modern education is seen in the field classes, chiefly in botany, which are organized everywhere for the study of things as they

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really are. In this form of education, if I am not mistaken, Dr. Hollick was a pioneer, and he was, I think, one of the original founders of this association and is today one of its most active and valuable members. And not only Dr. Hollick, who is a professional educator, but you, Mr. President, as you have told us with natural enthusiasm, and I, and all the men who have the welfare and progress of our race at heart, realize the inestimable boon of having collections like these of this association near at hand and easy to consult.

It seems to me that the gentlemen who composed the Association of Arts and Sciences in its original form and under its original title, deserve the gratitude of all Staten Island. They pursued a steady course of research, they got together and preserved numerous specimens of all sorts, they produced papers which must be accepted as part of the permanent educational literature of the island, and they gave money as well as labor and thought to the building up of what cannot fail to be one day a distinctly important feature among the institutions of this great city—a society which preserves for all time the complete natural and scientific and art history of the most beautiful borough of the city and destined to become a most important one commercially.

The old members of this association, as the importance and volume of their achievements increased, began an active propaganda which enlisted the interest of Staten Islanders far and near, and resulted, for one thing, in a largely increased membership. This brought in money, in small annual dues for the most part, and not much, but enough to help. After we had arranged quarters for the Association in the borough hall, we were able to obtain from the municipal authorities an appropriation for the furnishing of this room. I may be pardoned for rehearsing these facts, because they lead up to a subject which, as you know, is a lively and pressing one in the minds of the gentlemen who form the working nucleus of the association—namely, the possibility of obtaining from the city an annual appropriation of subvention to help support and advance the society and its work.

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I do not see, myself, why an association like this, which has shown how much it can do unaided, which has grown to such proportions and shows such results, and which manifestly and unquestionably must grow even more rapidly in the future and assume an even more important place in the city of New York—I do not see why it should not be recognized as the city has recognized the American Museum of Natural History and the Metropolitan Museum of Art. This is not a moneymaking institution, any more than a public school or the College of the City of New York or a public library; and all such institutions ought, it seems to me, to be helped as far as possible by the community which they benefit. The Metropolitan Museum of Art has grown from a very small beginning, and there are men still active among us who were members of the association which began it, and many more who remember the little building in Fourteenth street in which it was housed for many years. The association which shows, as this one does, a capacity for growth of a similar kind, if not to such grandeur, should be fostered and assisted by every legitimate means.

I speak of this because I am aware that I am looked to to bring it to pass. That, of course, I cannot do. Much more can be done in that direction by officials in the central city government. This much, however, I can say for myself—that, as soon as the finances of the city permit, and at any legitimate opportunity that offers, I shall use my utmost endeavors toward a regular appropriation for the Staten Island Association of Arts and Sciences.

I am very glad to have an opportunity to formally welcome the Staten Island Association of Arts and Sciences to the borough hall. It is very pleasant to me to think that this important society has found its home under the same roof that shelters the local borough government with all its bureaus and branches, and that we form all together one family, devoted with a single purpose to the welfare and advancement of our island.

I am inclined to regard this as a particularly propitious date for the initiation of the new abode of the Association, as it is the

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anniversary Saturday of the laying of the cornerstone of Richmond Borough Hall. That event took place on May 21, but it was the Saturday of the same week in May as this is; and I hope that today, by inaugurating a new era in the history of this association, we are laying the cornerstone of a society which in the years to come will far outgrow its present accommodations.

Dr. Frederic A. Lucas, Curator-in-chief of the Museums of the Brooklyn Institute of Arts and Sciences, gave the following address on

Purposes and Aims of Modern Museums

We are gathered today to take part in the opening of a new museum, the latest, but we may be sure not the last, of the public museums of Greater New York, and it has been suggested that I say a few words on the relation of the museum to the public. This would seem an easy task for one whose entire working life has been spent in museum work and yet I confess I have found the task a hard one.

Why do we have museums at all; what are they for; why in this very practical age are millions expended in establishing them, what does the public receive in return for the money it has invested?

All these are perfectly fair questions, the kind that any business man or city official might well ask if called upon to aid in founding or sustaining a museum, and yet they are by no means easy to answer off hand. Merely to answer the question why we have museums would take much time, for like most things, museums did not spring into existence all at once but are the product of long years of growth and evolution, and they are still growing and changing.

The purposes of museums have been well defined by some of the men best acquainted and most intimately connected with them and I cannot do better than give you two of these definitions. According to John Edward Gray, museums are for "the diffusion of instruction and rational amusement among the masses

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of the people and to afford the scientific student every means of examining and studying the specimens which the museum contains." And thirty years later our own Dr. Goode wrote that "A museum is an institution for the preservation of those objects which best illustrate the phenomena of nature and the works of man and the utilization of these for the increase of knowledge and for culture and enlightenment of the people."

Now, if a museum fulfills its purposes as defined by Dr. Goode, it seems to me that the question whether the public gets the interest on its investment would be answered in the affirmative. Even if it merely preserved a record of the life that with the rapid march of civilization is being ruthlessly swept out of existence, would not the museum serve a good purpose and justify its being? For nowadays the entire face of Nature is being altered by the energy of man, and natural conditions are changing so rapidly that in many places the present generation has little or no knowledge of what was there even fifty years ago.

It is only three centuries since Henry Hudson sailed up New York Bay—there are many edifices in Europe older than that, and yet little remains of what was here then. The inhabitants—the forests, to a considerable extent the very rocks themselves—have disappeared, and the life that then abounded has disappeared with them. And it is one of the purposes of a museum, one of the purposes of this museum, to carefully gather and preserve all objects that may aid in giving an idea of the life that was here three centuries ago and to provide for the information of those who will be here three centuries hence.

But this museum of today is a great deal more than a place where objects are merely preserved, it is an educational institution on a large scale, whose language may be understood by all, an ever open book whose pages appeal not only to the scholar but even to the man who cannot read.

Its mission or one of its missions is to give the visitor a hint of the many interesting things that are to be found close at hand, to show their hidden meaning, in short to teach him to observe and to think.

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Now the idea that the museum is an important educational factor in the community is comparatively new, and it is only recently that steps have been taken to put this idea into execution. The early museums were primarily for the student, secondarily for the public, and when a century and a half ago the British Museum was opened to the public, the attendance was limited to thirty a day and admission was by ticket and carefully arranged for in advance. Nowadays when the visitors at our larger museums average from 500 to 1,000 or more a day, this strikes us as amusing, but this was really the germ from which the modern educational museum has developed. And if your attendance should seem small in comparison with that of older and richer museums, it may encourage you to recall that there was a time when what is now the greatest museum in the world had but 1,000 a year.

We are so familiar with public museums that we are prone to forget how very recent they really are and how their aims and objects have changed even within the past twenty-five years. The great Museum of Natural History impresses one as having existed for long years and yet not only this, but every museum in Manhattan has practically come into existence, certainly into active being, in my own day. And yet while museums themselves are far from ancient the idea that they might be utilized on a great scale for the benefit of the public at large is still more recent.

I hesitate to repeat what I have said so often of late that one of the great differences between the old museum and the new is that the one displayed objects while the other aims to illustrate ideas. And yet this is one of the important characteristics of the modern museum. The old museum was merely a storehouse whence students drew the material for their work and into which the public was permitted to gaze. The new museum seeks to interest the visitor in the field of work, illustrates its methods and purposes and displays some of the results. For example, in place of an hundred birds intended only to show just so many species

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and meaning little to the average visitor, we have a single group showing one of these birds at home, the purpose of which is to show the conditions under which birds live and to interest the beholder in the study of bird life.

The idea that the visitor must be interested, though not particularly new, is again one that has gained general acceptance only recently. Nowadays it is definitely recognized that while a museum is an eminently serious proposition it will not be taken too seriously by visitors, that in fact only a small proportion of them seek it with a definite purpose to be instructed, and so a distinct effort is made to arouse the interest of the average visitor. A museum should take itself seriously but none the less should it provide " rational amusement " for the many by whose funds it is largely supported. And this it does by ever keeping in mind what Dr. Goode used to call the human interest endeavoring to show some object or make clear some idea that will appeal directly to the observer and arouse his personal interest in the museum. To do these things and do them well calls for knowledge and training and I often wonder if the public appreciates the fact that museums do not run themselves; that it takes a trained force to get proper results out of a museum!

A museum without a staff is much like a locomotive without an engineer and fireman, the fuel, water, and apparatus are all present, but without the engineer the machine will not move. Did any of you ever do so simple a thing as write a label? If not, try it, taking something with which you think you are familiar, a robin for example, or a clam, tell what it is, where it is found, what it does and what it is good for and see what is the result. Did you ever think how many times, and for what diverse objects a museum officer is called upon to answer the question " what is this? " If you have you will realize the truth of the saying that a curator should know something about everything and everything about something, and if you have spent half a day in a curator's office you will also realize that a curator has many and varied things to do and that a museum is not a haven of rest.

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That a museum should be a place for study and research carried on by the few who are directly interested in what seems abstruse science, is really a phase of its relation to the public. We know very well that what is a matter of purely scientific interest today is a matter of vital importance tomorrow, that the farmer, the fruit grower, the physician, for example, depend more and more upon the trained man of science for help in what were once considered matters with which he was not at all concerned. Here and elsewhere, the museum takes the knowledge gained by years of study, puts it into visible shape, and makes it available for all. And, after all, something is due the student for without him there would have been no museum for natural history.

I have said nothing of the field of a museum of art and would only remind you that the Staten Island Association is an Association of Arts as well as Sciences, and suggest that if the domain of Nature has been sadly encroached upon by the labors of man the province of art has been correspondingly widened. Neither have I said anything of what one may call the civilizing influence that a museum exerts upon a community, though this is one of the results, if not among the professed objects of the existence of a museum.

To inculcate the spirit of law and order, to foster a love of the beautiful, to teach the visitor to observe and think, to supply "rational amusement" to the masses, are among the things that a museum does for the public in return for its cash investment. Sidney Smith is credited with having preached the shortest and most effective charity sermon on record. He said, "he who giveth to the poor lendeth to the Lord. If you like the security, come down with the dust," so if you like your museum, support it.

But over and beyond these things are the educational opportunities offered to everyone and, after all, love of knowledge is the supreme test of civilization. Man stands pre-eminent among all living creatures in his desire for knowledge, his wish to know the reasons for all that goes on about him, and according to the

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extent of this desire does he stand in the intellectual scale. The savage merely wishes to know where he can find something to eat and wherewith he may be clothed, the astronomer casts his eye across millions of miles of space seeking for knowledge of other worlds.

Informal remarks were made by Mr. Charles H. Townsend, Director of the New York Aquarium, and by Mr. Charles L. Pollard, Curator-in-chief of the Museum of the Association.

The Museum was then, by the President, formally declared open to the public.

In the evening a subscription dinner was given by the Board of Trustees, at the Staten Island Club, in honor of the invited guests.

The trustees present were Hon. George Cromwell, Howard R. Bayne, Arthur Hollick, William T. Davis, John DeMorgan, Philip Dowell, Stafford C. Edwards, J. Blake Hillyer, George S. Humphrey, Charles A. Ingalls, William A. Johnston, William H. Mitchill, and Samuel McK. Smith.

The guests present were Sanderson Smith, Franklin W. Hooper, Walter C. Kerr, Frederic A. Lucas, Charles L. Pollard, Charles H. Townsend, Louis L. Tribus, and William G. Willcox.

Informal addresses were made by President Cromwell, Professor Hooper, Dr. Lucas, Mr. Townsend, and others.

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Publications of the Association

Proceedings of the Natural Science Association of Staten Island

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883 to June 3, 1905, and were included in nine volumes, separately indexed, as follows:

Volume	I, pp. 74	Nov. 10, 1883	Oct. 13, 1888
"	II, pp. 87,	Nov. 10, 1888	Oct. 10, 1891
"	III, pp. 67,	Nov. 14, 1891	Oct. 14, 1893
"	IV, pp. 86,	Nov. 11, 1893	Oct. 12, 1895
"	V, pp. 97,	Nov. 9, 1895	Oct. 10, 1896
"	VI, pp. 64,	Nov. 14, 1896	Oct. 8, 1898
"	VII, pp. 79,	Nov. 12, 1898	Oct. 13, 1900
"	VIII, pp. 92,	Dec. 8, 1900	Oct. 10, 1903
"	IX, pp. 51,	Nov. 14, 1903	June 3, 1905

Any of the above listed volumes may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, Mar. 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, Mar. 10, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, Oct., 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Proceedings of the Staten Island Association of Arts and Sciences

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents and Index, is as follows:

Part I, June–December, 1905, pp. 1–20, issued April 10, 1906.
" II, January–May, 1906, pp. 21–69, issued July 9, 1906.
" III, October–December, 1906, pp. 71–92, issued April 17, 1907.
" IV, January–May, 1907, pp. 93–136, issued September 20, 1907.

Volume II, Part I, October, 1907–January, 1908, pp. 1–46, issued October 17, 1908.

The Act of Incorporation, Constitution, and By-Laws, etc., (Pamph., 8vo, pp. i–xxv. 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i–xxxvii. 1907), will be sent free on application.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

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[1]Adopted by the Board of Trustees April 2, 1908.

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VOL. II July 1908–February 1909 Part III

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

VOL. II JULY 1908–FEBRUARY 1909 PART III

The Chestnut Disease on Staten Island[1]

BY ARTHUR HOLLICK

Probably all of us have had our attention attracted to the large number of dead and dying chestnut trees throughout the island during the past two or three years; and so many persons have evinced an interest in the matter and sought for information in regard to the phenomenon, that it has occurred to me to present a brief outline of what we have learned in regard to the nature of the cause and certain incidental correlated facts.

The disease apparently had its origin somewhere in this vicinity and probably had begun its ravages before the time when it first attracted serious attention, in 1905. Exactly where the center of affection may have been has not been determined, nor is it certain where or by whom the effects were first systematically observed and recorded.[2]

By that time the disease had become so noticeable in Bronx Park that it could no longer be ignored by those who were responsible for the care of the trees, and an investigation was begun by Dr. Murrill to determine if possible the exact nature

[1] Presented October 17, 1908.

[2] Dr. W. A. Murrill, "A Serious Chestnut Disease." Journ. N. Y. Bot. Gard. 7: 143–153, *figs. 13–19.* June, 1906.

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of the disease. Cultures were made from the affected trees, and healthy branches were inoculated and placed under careful observation. The cause was ascertained to be a hitherto unknown, or at least undescribed fungus, to which the name *Diaporthe parasitica* was given, in *Torreya,* **6**: 189. Sept., 1906.

This fungus is found to begin its destructive work beneath the outer bark, in the inner layers and cambium, in which the mycelium has its growth. The first indication of its presence is the death of the bark, which changes in color on the exterior to a pale brown. Later on, little yellowish pustules, containing the spores, appear on the surface, giving a warty appearance to the bark. These spores germinate throughout the summer and early autumn and when ripe are disseminated by the wind and other agencies; and those which find a suitable abiding place, in abrasions of bark, or in wounds due to broken twigs and branches, insect punctures, etc., immediately start new centers of infection. The mycelium grows in a constantly enlarging circle around the point of infection until it finally girdles the twig or branch, cutting off the food and water supply and causing the death of the member above. The destructive effects are therefore not due entirely to the attack of the fungus on the area immediately infected but also to the incidental effect of the diseased part in starving the part above. The smaller branches are therefore the most likely to go first and trees that are attacked generally present the characteristic feature of dead and dying extremities for several seasons before they entirely succumb.

Trees that are broken or trimmed or that otherwise present numerous wounds or abrasions in which the spores may enter are always the worst infected. In fact, so far as observations have gone, it seems almost as if some injury were necessary for the spore to gain entrance beneath the bark. The larger trees on our hills, which were most affected by storms, were the first to go. The larger proportion of these are already dead, while those of smaller growth and with less injured branches, as the growth at Tottenville, are mostly still living, although badly infected and evidently destined to last but a few seasons more.

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The most disquieting fact is that the disease is steadily spreading from this vicinity. It has now reached up the Hudson River as far as Poughkeepsie and into the adjacent parts of Connecticut, Massachusetts, and New Jersey. It has also been reported from as far south as the District of Columbia and west as far as Altoona, Pennsylvania. Thus far only the chestnuts and the southern chinquapin have been attacked. All of our other forest trees seem to be immune. No remedy has yet been found, and the nature of the disease and the method of its propagation and growth make this an exceedingly difficult problem. Unless it very soon ceases of itself, as other epidemics often do, the chestnut, in this vicinity at least, will soon be extinct.

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Note on the Chestnut Fungus[1]

By William T. Davis

On the twentieth of last June I found growing in the woods in Buck's Hollow a young chestnut, less than two inches in diameter, which was dying of the chestnut fungus. This little tree showed not only the usual pustules common to chestnuts suffering from attacks of *Diaporthe parasitica* Murrill, but near the ground there were many slender thread-like gelatinous masses, often one fourth of an inch in length, hanging from the bark. These jelly streamers dry, and the spores thus liberated are blown about by the wind or otherwise transported and find lodgement on other chestnut trees. The jelly streamers are mentioned because their presence and use in distributing the spores is not so commonly noticed as the simple pustules on the bark of the affected trees. In the present instance the unfortunate little tree had not only been attacked by the fungus, but as a result of its dying condition, had attracted the wood-boring beetle *Neoclytus erythrocephalus* Fab., and I found many of the insects running rapidly over its trunk and branches.

The chestnut is mentioned in the history of our island in connection with boundary lines, and for the use of its bark in tanning, by the early settlers. The value of its wood is of course well known. It is still very plentiful, but the rapid spread of the chestnut fungus to all parts of the island is fast killing what was probably at one time our most common forest tree. In no locality that I visited during the summer of 1908, with the exception of northern Manhattan Island, were there so many dead and dying chestnuts to be seen, as on Staten Island. In northern New Jersey no affected trees were observed at Lake Hopatcong, where the chestnut is plentiful, but at Ramsey several were found that

[1] Presented October 17, 1908.

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had died from the fungus. At Jamesburg in central New Jersey, where the chestnut is quite common, a few trees were dead and dying. It is evident that the chestnut blight has not had time to become so thoroughly established in these localities.

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A Visitation of Geometrid Moths[1]

By William T. Davis

The New York papers of July 17, 1908, and for two or three days thereafter contained accounts of the great number of measuring-worm moths, *Ennomos subsignarius* Hübner, which suddenly appeared in the city on the evening of July 16. The visitation followed a westerly wind, and the white moths, which were particularly numerous uptown, covered the fronts of buildings and swarmed by the thousands about the arc lights.

A considerable amount of "Newspaper entomology" was given by some of the writers, who stated among other things that the brown-tail moth had come to town from Massachusetts, and much injustice was done to the English sparrow, which was said by several observers to pay no attention to the moths. The "City a-flutter with Moths" was the truthful heading of one of the articles published on the 17th of July, and the next day the same paper stated "now, after forty-six years, the job which the English sparrow was brought here to accomplish is before him again. Yesterday thousands of the feathered little fellows worked overtime. A sparrow without a fluttering bit of white between his bills was infrequent.

There was one thing that the writers and the entomologists to whom they applied for information failed to record, and that was the fact that the great swarm of *Ennomos subsignarius* which had so suddenly appeared in the city, contained practically no females. I was unable to find any females among the many moths on the sides of the N. Y. Produce Exchange and the Custom House building during July 17 and the day following. The fear expressed that next season the caterpillars will appear several hundred-fold and the destruction will be great unless the pest is successfully fought, is not well founded.

[1] Presented October 17, 1908.

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The moths appeared also on Staten Island in considerable numbers, and I collected a few as samples at St. George on July 17. I was fortunate in finding a single female among the lot, for the sparrows had pulled the wings off of and eaten the bodies of all the moths that they could find. The sparrows were also busy about the Custom House and the N. Y. Produce Exchange, and the white wings of the moths were common objects on the sidewalks.

During my entomological experience I have seen two other species of geometrid moths quite common on the lower part of Manhattan Island, or in the thickly settled parts of Staten Island. In June, 1884, the very pretty *Rheumaptera hastata* L., a common species some distance to the north of New York City, was quite plentiful in the city, and often flew into the windows. During the same year it was plentiful on Staten Island. *Cingilia catenaria* Drury is often seen in great numbers in September in the more rural parts of Staten Island, but on occasions after a storm I have found the moths sticking to the fences and house-sides at St. George, for the unfortunate insects were blown against and had adhered to the wet boards.

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Local Notes on Young Owls and Hawks[1]

By James Chapin

Barred Owls, *Strix varia.*

At the meeting of this association in October, 1907, I gave a report of my observations on barred owls found breeding on Staten Island last year. During 1908, though I have had less time to devote to it, I have again tried to keep track of the same birds. Our favorite nest, at Great Kills, which has been watched carefully for two years past and which has probably been occupied for a much longer time, was not used this year, I regret to say, though we saw a barred owl near it on March 8. Perhaps one of the birds was shot. In September, however, I again heard an owl near this place, and I hope to find them nesting next spring.

The nest at Woodrow is in a hole in the top of a large dead tree, and the old owl is usually very reluctant to leave; but on March 29 I succeeded in making it fly by climbing a little way up the tree. On May 3 I went all the way up. The old bird was out at the time, and as I climbed, it came flying back on the opposite side of the tree from that to which I clung. I suppose it could see only my hands, for it flew right at me, scratching my right hand as it passed. This was my first and only personal encounter with an adult barred owl. There were two young birds in the nest, about two-thirds grown, and some feathers of a red screech owl, *Otus asio,* of a starling, *Sturnus vulgaris,* and of flickers, *Colaptes a. luteus.*

Last year I found a barred owl's nest near Richmond Hill; but as a sawmill entered the region in the summer, and all the live trees around the nest were cut down, the owls were evidently dissuaded from reoccupying their old quarters. They probably

[1] Presented October 17, 1908.

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nested again in the vicinity, for one was seen on May 3, in a part of the woods not affected by the lumbering operations.

At Green Ridge, in a huge elm, there is, as I stated last year, a nest which has been invaded by a colony of bees. Early this season, before the bees became very active, one egg was laid, and was being incubated at the time of my visit on April 12. Later the bees seemed to drive the owls away, for on May 3 I found that the egg had been deserted and had spoiled, though a barred owl was heard hooting in the woods.

In some cedars near Richmond a barred owl was regularly to be seen in March and early April of the present year, but in spite of a diligent search no nest could be discovered. As expected, I also found one of these owls staying in a cedar grove at Willow Brook. There were practically no cedars with good horizontal branches, so this owl chose as favorite perches trees whose tops had been broken and bent over to a more or less horizontal position. Since the same man who runs the sawmill at Richmond is also cutting out the best of the woods that remain at Willow Brook, this owl, too, may soon have difficulty in finding a breeding place.

Still another barred owl has a roost at Annadale, under which I picked up, on March 15, a number of pellets containing the bones of a crow, a rabbit, *Lepus f. mallurus,* and a star-nosed mole, *Condylura cristata,* as well as the usual mouse and shrew bones. Here too the nest remains to be discovered.

In the woods near South Avenue, at Watchogue, in the night of July 29, I listened to a barred owl giving what might be called its song. This is best written as "who-who to-who, who-who to-who-ah", and is often to be heard before the owls' eggs are laid, though not while the young are in the nest.

Lastly, in the evening of September 13, Mr. Alanson Skinner and I heard still another to the left of the Princes Bay railroad station. In this locality there are probably resident barred owls, though I have not seen them. This would make, in all, nine places where we have located barred owls, and there are probably at

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least a dozen, on Staten Island, where these interesting birds nest with more or less regularity. What interferes with them most, as long as they are not shot, is the destruction of the woods, now going on so rapidly in many places.

BARN OWLS, *Aluco pratincola.*

Our first visit this year to the barn owls' nest at New Dorp was on April 19. Two owls were in the coop, where seven eggs had been laid, without even an apology for a nest, on the rubbish covering the floor. Alongside the eggs lay a freshly killed meadow mouse, *Microtus pennsylvanicus.*

My next inspection was on May 5, very late in the afternoon. One young bird had appeared, and it set up a vigorous peeping as soon as it was deserted by its parent, while in one of the six unhatched eggs I could hear a similar note produced by another young owl within. On May 10 Mr. Howard Cleaves paid them a visit. Something had evidently happened to the first two young birds that hatched, for he found only four eggs, and one very newly hatched owlet.

Mr. Taylor, who was now in charge of the barn, would not let us go up inside when we came on June 21, but Mr. Cleaves climbed up on the outside of the pigeon coop, and scared out one old owl, while he could also hear the hissing of the young birds in the coop. Just outside the entrance lay an addled egg, which the owls had apparently tried to dispose of, and some meadow lark feathers. From the remains of birds occasionally found around this nest, it is shown that even this specise of owl cannot be said to feed exclusively on small mammals.

From time to time I have heard of white owls that had been seen or shot about buildings on Staten Island, and some of them must have been barn owls. Several years ago one is said to have been killed at a burning barn near Rossville. This particular individual is reported to have been "stuffed," but I have not as yet been able to locate its remains.

On May 30, 1908, Mr. Thomas Flynn pointed out to me an old

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barn near Green Ridge, in which he said a "white owl" had been seen a few days before. Upon investigation, I found, on the floor of this barn a number of pellets, which, from their size and consistency, I am practically sure were disgorged by a barn owl; but though I have looked in this barn many times since, I have never seen any owl in it, or found any more pellets. From this I concluded that this "white owl" may have shared the deplorable fate of most of the others about which I have heard.

RED-SHOULDERED HAWKS, *Buteo lineatus.*

During 1908 we actually found the nests of only two pairs of red-shouldered hawks, mainly because of the lack of sufficient time to search for more. One of the two pairs found breeding last year near Eltingville, nested again within one hundred and fifty yards of their old home. The new nest was thirty-five or forty feet up in a red oak, *Quercus rubra,* and, on April 5, contained three eggs, on which the old bird had not yet begun to sit. By April 17 the number of eggs had been increased to four, and incubation was under way.

A month later, May 17, there were two downy young hawks in this nest, but one was fully twice the size of the other, the difference being undoubtedly due to age. A few cedar twigs, and sprays of green leaves, as usual, lay on the nest. The latter I brought home, and Mr. C. L. Pollard identified them for me. One was silver maple, *Acer saccharinum* and had fruit on it, one was red maple, *Acer rubrum,* two pin oak, *Quercus palustris,* and three black birch, *Betula lenta.*

Three days later I noticed that the primary quills were beginning to sprout on the wings of the larger of the two young hawks, and this one now sat up and gave a scream of discontent, resembling the ordinary "kee-pou" of grown up red-shoulders. A fresh assortment of leafy twigs, mainly maples, again adorned the nest.

On June 7 the larger of the young hawks had a brown back and streaked breast, with wings from the carpus to the tips of

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the primaries about seven inches long, while the smaller one was just getting a few dark feathers in the scapular tracts. The ears of both were inhabited by white fly larvæ, the smaller hawk, which I examined particularly, having about four in each ear. Mr. W. De W. Miller, of the American Museum of Natural History, tells me that he has found such parasites in the ears of young broad-winged, *Buteo platypterus*, and Cooper's hawks, *Accipiter cooperi*. In the nest were some small white and brown feathers from young chickens, and some pellets containing snake scales and insect remains, as well as feathers and hair.

The elder of the two young hawks must have left soon after this visit; but, on June 21, the younger one was still sitting on a branch beside the nest. It could scarcely fly at all, and I brought it down for Mr. Lang and Mr. Cleaves to photograph. In the nest were some feathers of young white and Plymouth Rock chickens, a pellet containing the skull of a short-tailed shrew, *Blarina brevicauda*, and some feathers of a young chewink, *Pipilo erythrophthalmus*, and of a sparrow, *Melospiza melodia* (?).

After posing for its picture, the young hawk was left in a small tree.

The second red-shouldered hawks' nest was found in some woods south of Richmond, where no nest was discovered in 1907. It was about thirty-five feet up in a chestnut tree, and held three eggs. The old hawk, though it flew off at my approach, was very bold, swooping at me several times as I sat in the tree. The nest was some distance out from the trunk, and not very securely placed. At my next visit, May 3, I found that it had been dislodged, whether by human agency or not I could not tell, and was lying on the ground beneath. No trace of eggs was discernible.

On May 10 Mr. William T. Davis and I found another red-shouldered hawk's nest in the same woods, which, I am satisfied, was the second attempt of the pair of hawks just mentioned. The nest was now built about thirty-five feet up in a scarlet oak.

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Quercus coccinea, and there were three eggs in it when I first climbed up, a week later. These eggs were of a pale bluish color, with no distinct spots, while the eggs in the first nest had been of normal coloration, with the usual brown markings.

At 6.30 a.m., on May 20, while it was raining, I walked up and tapped the tree without making the old hawk fly off the nest. Ordinarily it would have left as soon as I came near, but it seemed to know that the rain would injure the eggs, so I made no attempt to climb the tree.

One egg had begun to hatch on June 3, and on the 7th there was a downy hawk in the nest, while the second egg was opening. The hind legs of a frog, *Rana* sp.?, were in the nest. These hawks evidently were not acquainted with the human custom in regard to the eating of frogs, but rudely devoured the legs last.

On June 18, this nest was found to have been thrown out of the tree, this time plainly by human beings. There was no sign of young birds on the ground with the nest.

During the rearing of their young, red-shouldered hawks customarily cover the top of the nest with twigs bearing fresh green leaves. Whether they do this merely for ornament, or for some other purpose, I cannot even guess; but it is certainly a most effective method of keeping the nest clean. All excrement is, of course, deposited over the edge of the nest; but there is still a lot of refuse, remains of food, and the sheaths that fall off the growing feathers, to be disposed of. Examination of the lining of a nest after the young hawks have left shows it to be composed of alternate layers of leaves and rubbish, while the top is comparatively clean.

Certainly no RED-TAILED HAWKS, *Buteo borealis,* breed on our island, yet adult birds of this species were observed as late as April 12, April 20, and May 3, 1908, at New Dorp, Annadale, and Richmond respectively.

SPARROW HAWKS, *Falco sparverius.*

In early June, 1905, on two occasions I saw a pair of sparrow

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hawks around a large cherry tree on Tyson Lane, New Dorp. One of them swooped down excitedly in my direction several times, but, though I climbed the tree, I could not find the nest. A year later, near the same place, a sparrow hawk again flew at me, but this time I could not even see in what tree the nest was to be looked for.

On May 24 of the present year, a female flew out of a large elm in an open field at Green Ridge. Its mate soon appeared, with food in its claws, and they showed considerable anxiety at my presence. The tree contained a number of holes, excavated mainly by flickers, but, while I was near, the hawks would not reenter their abode.

The nest was found on May 30 to be in a hole made by the breaking off of a branch, on the westerly side of the tree, not more than twenty-five feet up. There were three eggs, of a light buff ground color, finely speckled with rufous spots, lying on the chips of wood in the bottom of it. In the same tree were a couple of starling nests, which the young were just leaving, and one flicker's nest. On June 7 the sparrow hawks' eggs were found to number four.

At 8.15 p.m., July 1, three young sparrow hawks were found in this nest, and examined by the light of a match. The fourth egg had disappeared. No old bird flew out at our approach, so I presume that they do not spend the night in the nest at this stage of the proceedings.

On July 12 the young hawks' primaries were about 1½ inches long, but their tails somewhat shorter, while brown feathers were growing out on their backs and breasts. Their beaks were of a dull whitish color, very different from the bills of the young red-shouldered hawks, and the nostrils were noticeably round, with a little tubercle in the center of each. One of the young hawks while being handled uttered a hoarse imitation of the common "killy-killy-killy" of its parents. Part of the back and legs of a small bird, probably a small sparrow, was in the nest.

On this date one of the young sparrow hawks was taken to my

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home, and kept a week, being fed mainly on house mice, *Mus musculus*. It could eat comfortably about three mice per day, hair and bones included. Many of the mice were immature, and most of their bones must have been digested by the young hawk, for it disgorged only a few pellets containing hair, and almost no bones. During the week it grew with remarkable rapidity, and, at the end of that time, its whole body was clothed in winter plumage, with only a little down still adhering to the tips of the new feathers. Fast as it had grown, however, I found when it was put back in the nest on July 19 that it was not quite as large as the other two. All three young sparrow hawks were, to judge from their plumage, females.

There was also a corresponding difference in the tempers of the young hawks. The one I had kept at home was perfectly tame, and would undoubtedly have made an interesting pet, could I have devised a satisfactory method of procuring food for it; but the other two, when taken out of the nest, would do little except turn over on their backs, and present their open claws as traps for unwary fingers. Knowing the fondness of sparrow hawks for grasshoppers, we offered some to the young birds. The tame one ate about six, with evident relish, but the others refused to be fed.

All three sparrow hawks were put back in the nest, and within a very short time were probably able to fly. On September 13, in a neighboring pasture, three sparrow hawks were seen, which were undoubtedly part of the family found in the elm tree. In September, 1907, I recollect a similar flock of sparrow hawks that seemed very much attached to these same fields, and had probably come from a nest in the vicinity, perhaps in the very same elm.

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Comments on the Contents of a Grebe's Crop[1]

By Howard H. Cleaves

On Wednesday, November 4, there was brought to me a horned grebe *Colymbus auritus,* which had been shot at Princes Bay, Staten Island, on the same date.

I skinned the bird, and through curiosity opened its crop to determine its contents. Of shrimps there were several. I found also the somewhat mangled remains of a number of "spuring" or silversides. I then found what seems to be the body of a young mossbunker, which was pretty well preserved. Most interesting of all was a rather large red rubber band. These were distributed through a mass of more thoroughly digested food. There were many very small, white pebbles, which evidently aided in the process of digestion.

A large part of the mass mentioned above consisted of what I finally made out to be feathers. There must have been many of them. Mr. James Chapin tells me that he has ascertained from Mr. Waldron De Witt Miller, of the American Museum of Natural History, that it is a regular habit with the horned grebe to pluck feathers from its own body and swallow them. He could, however, give no explanation of the purpose of the grebe in doing so.

Mr. Chapin suggested that the grebe probably mistook the red rubber band for a sandworm when it was swallowed, and that is the most likely explanation, although I did not find the slightest remains of any true worms. It would seem they should have been discovered if they form a part of the grebe's regular diet.

[1] Read at the meeting of the Section of Biology, November 14, 1908.

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Observations on Staten Island Moles[1]

By William T. Davis

A star-nosed mole, *Condylura cristata* L., was found on October 20, 1908, near Rossville on the farm of Mr. Isaac Wort, who has kindly given me the specimen. When discovered it was digging near a spring in the low, wet ground. This species was included in the "Preliminary List of the Mammals of Staten Island" (*Proc. Nat. Sci. Assn. S. I.*, Extra No. 3, Aug., 1885) on the authority of one specimen seen on the ice at Silver Lake by Mr. Schultze. Mr. James Chapin has found several skulls of this mole in the pellets of the barred owl. They may be told from the skulls of the common mole by having 44 teeth instead of 36, and in being more elongate.

Some years ago, on the 10th of October at 11.15 a.m., I observed a common mole, *Scalops aquaticus* L., under the loose sand at Richmond Valley. After watching it for a time, I jumped suddenly and captured it. It was eating a millipede at the time, which it did not at first relinquish. I placed it on the surface of the ground and it remained quiet for so long that I imagined it had been injured. After a while, however, it commenced to dig, and it required a little over a minute to get below the surface, though the ground was loose and sandy. It very shortly came to the surface again and moved to a new spot. Here in about the same length of time it was out of sight, and appeared to travel in a corkscrew fashion straight down into the loose soil. After it had gone a little way, I dug carefully after, and followed it about a foot below the surface; it was digging quite fast after the first few inches had been made, or until it got below the matted roots near the surface. This mole did not appear to be fully grown.

[1] Presented November 21, 1908.

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One afternoon on a cloudy, rainy day, also in the month of October, I found a common mole among some stones near Silver Lake, and stood still to watch it. It moved stones a foot square that weighed five or six pounds as it burrowed beneath them, and they were uplifted with considerable violence. In making its burrow it dug at first to one side and then to the other.

Thoreau mentions a star-nosed mole which he carried to a plowed field "where he buried himself in a minute or two." He says also "I see deep indentations in his fur, where his eyes are situated, and once I saw distinctly his eye open, a dull, blue (?) black bead, not very small, and he very plainly noticed my movements two feet off. He was using his eyes as plainly as any creature that I ever saw. Yet it is said to be a question whether their eyes are not merely rudimentary." Nevertheless, in a common mole which I found dead the eyes appeared as two small black specks that did not come through the skin. The hair was carefully pulled out about these eye spots, so that they could be examined. Neither this specimen nor another that I subsequently found dead, also on the surface of the ground, showed any signs of having been injured.

It was nearly twelve o'clock on the 6th day of April, 1889, when I came to a little clearing and garden spot in the woods near "Sandy Ground" at Pleasant Plains. I observed a curious red-striped object in the garden, and drawing nearer discovered it to be a woman sitting motionless on the ground with a hoe raised above her shoulders as if about to strike. She was dressed in a combination garment of hood and cloak, made all in one piece, and had dark eyes and features as if related to some of the old time Indians who are known to have last lived on this sandy part of our island. She explained with much animation, that a mole always came to the surface just at noon, and as it was nearly noon, she was waiting to cut in two with the hoe, as soon as he appeared, the mole that had dug up her early peas. There are many fortunate delays in this world, and the one for that mole, was that which prevented him from keeping his traditional appointment, just at noon, on that bright April day.

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Notes on the Purple Sandpiper and Hooded Merganser[1]

By James Chapin

For several years past I have made frequent visits, at all seasons, to the beaches on the south side of Staten Island, but without seeing a purple sandpiper, *Arquatella maritima,* until the present autumn. This sandpiper, indeed, is admitted to be uncommon even on Long Island, but as it is more or less resident in this latitude in winter, an occasional individual might be expected to visit our shores. On the 3d of November, 1908, as Mr. H. H. Cleaves and the writer were landing on the beach near Great Kills, one was seen on a mud bank, not twenty-five feet from our rowboat. Perhaps it was not accustomed to being approached from the water side, for the boat drifted to within fifteen feet before it decided to take flight. At this distance even the orange base of the bill, and the brownish yellow feet were plainly visible to the naked eye. It disappeared up the beach, but was later noticed flying over to Crooke's Point, where it alighted on the sand, and where it was afterward collected.

The hooded merganser, *Lophodytes cucullatus,* is one of our less common ducks. The writer had never seen a Staten Island specimen, either alive, or in any of the private collections of mounted birds he had examined; but on Monday, November 2, 1908, a young male of this species was shot in Wolfe's Pond, Princes Bay, Staten Island, by Mr. Joseph Woodward. It was one of a flock of four, swimming in single file, in the upper end of the pond. The leader may have been an adult male, for it was much more brightly colored, according to Mr. Woodward, than its companions.

[1] Presented November 21, 1908.

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Geological Notes in Connection with a Recent Lawsuit against the City[1]

By Arthur Hollick

Those who are familiar with the region in the vicinity of the Moravian Cemetery may recall the location and general appearance of a certain plot of waste land lying south of the Todt Hill Road and extending to the Richmond Road near the top of Red Lane. The surface slopes down to the Richmond Road and is deeply furrowed, partly by recent excavating operations and partly by the action of the rains. It is not a very attractive looking piece of property and its most prominent feature is a deep gully, extending from road to road near the western end, which has been eroded through the soft limonite iron ore forming the surface and for some distance into the weathered soapstone beneath. This gully has always been the natural outlet for a large part of the storm water from the Todt Hill Road and the land immediately adjoining. It presents practically the same appearance today as it did when I can first remember it, for the reason that erosion has produced but little appreciable effect since the time when the relatively hard soapstone rock was reached, which must have taken place prior to the date of my earliest visit, some thirty years ago. It has been known for a generation at least as a good collecting place for certain minerals, especially limonite, both earthy and in the form of "shot ore," talc, and chlorite.

During the year 1896 I had occasion to make an examination of the region and this gully in particular, while engaged in collecting data for a geological map of the island, which was subsequently included in New York City Folio No. 83, Geologic Atlas of the United States, issued by the United States Geological Sur-

[1] Presented December 19, 1908.

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vey in 1902. At the time when the examination was made, a seam of chlorite was found in the bottom of the gully, from which I collected specimens for our museum and recorded the location in my field notes, in connection with which I shall have something further to say later on.

In 1899 the Todt Hill Road was regraded so as to discharge the surface water into the old gully by means of a pipe culvert. As a matter of fact this did not alter the original conditions to any extent, so far as the discharge of surface water was concerned; but parties who subsequently came into possession of the property objected and sued the city, alleging that *during the past two years* the land had been damaged by erosion to the extent of $5,000, besides which they had suffered the loss of "precious minerals" to the amount of $20,000, the latter being specified in their bill of particulars as "pigment for the manufacture of dry and oil paints of several colors and shades," evidently meaning the red and brown earthy limonite which is distributed more or less irregularly over the surface. Upon this was placed a valuation of $4.00 per ton *and 5,000 tons were claimed to have been washed away.* Inasmuch as the claim was for loss during only two years this implied an erosion of 2,500 tons per year, or approximately 200 tons per month or *about 6½ tons per day.* But further than this, 5,000 tons of the material claimed to have been lost would fill the gully to the level of the adjoining land and leave some over for good measure; so that in order to account for this loss the only possible inference would be that the gully from top to bottom and end to end must have been eroded during the past two years.

The suit was preposterous and ridiculous on its face, but it was just as necessary for the city to prepare and to formulate a careful defense as it would have been if the claim had been a valid one, and I was called upon to assist in the matter. My recollection of the earlier conditions was quite clear, but someone else might have recollected something entirely different, so search was made for the chlorite seam in the bottom and it was

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found occupying the same relative position to the bottom as recorded in my note book for 1896. *This was definite evidence, which could be sworn to if necessary, that no appreciable erosion of the bottom of the gully had taken place since 1896,* and whatever loss of the surface material might have been sustained could only have been due to such as was washed in from the sides by rain-water falling on the land of the plaintiff. This surface material, consisting of earthy limonite, was the only material claimed to contain "precious minerals," and as a matter of curiosity an attempt was made to obtain some idea of its extent or amount within the area of possible erosion into the gully. Five holes were dug down to the soapstone at more or less widely separated locations and the depth of the limonite was measured. These measurements were respectively 2 ft., 2 ft. 6 in., 2 ft. 5 in., 2 ft. 9 in., and 8 ft. A liberal estimate of the possible amount of such material eroded during the past two years was calculated at about one-half ton. It would be of great interest to know the original location and depth of the material representing the 5,000 tons claimed to have been lost, and where it is now located or distributed. This is a rather large mass of solid matter to disappear in so short a space of time and leave no trace behind.

Incidentally may be noted the following analyses of the limonite, made in connection with the case by Professor H. T. Beans, of Columbia University:

SAMPLE NO. 1. SHOT ORE

	Per Cent.
Fe_2O_3	61.97
H_2O, combined	9.56
H_2O, hygroscopic (105° Cent.)	2.44
SiO_2	9.87
P	0.087
S	0.066

Metallic iron 39.48 = 789.6 lbs. metallic iron per ton of 2,000 lbs. ore.

SAMPLE NO. 2. EARTHY ORE

	Per Cent.
Fe_2O_3	66.38
H_2O, combined	8.20
H_2O, hygroscopic	2.14

Metallic iron 42.29 = 845.8 lbs. metallic iron per ton of 2,000 lbs. ore.

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It may also be pertinent to remark in closing that when the case was called for trial at the October term of court the plaintiff failed to put in any appearance and the case was dismissed.

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Staten Island Grouse Locusts[1]

By William T. Davis

In the list of Orthoptera found on Staten Island, printed in *Entomologica Americana* in April, 1889, six species of grouse locusts are mentioned. Since that time considerable advance has been made in the study of these grasshoppers, and we are now able to report thirteen species or forms as having been found on the island.

In *Psyche* **15**: 25. Ap., 1908, Prof. A. P. Morse gives an account of a small collection of grouse locusts sent to him for examination, and he there describes a new species taken on Staten Island and in New Jersey. To Prof. Morse we are also indebted for determinations and for passing on those already made.

About one hundred specimens have been collected on the island, which is practically all that have been seen. An examination of them gives rise to some uncertainties, and one is moved to acquit orthopterists from all blame in holding diverse opinions concerning these variable little grasshoppers.

Grouse locusts survive the winter as mature insects, and are therefore most noticeable in the fall and spring. They are preserved from their enemies by being protectively colored, but this does not prevent their destruction by forest fires. A great many must thus be destroyed annually, and probably it would be difficult to find again on our island all the species or forms here mentioned.

Nomotettix cristatus Scudd. April, May, June, August, September, October.

Nomotettix carinatus Scudd. Two specimens of this long-winged form have been collected on the island.

Neotettix femoratus Scudd. June, August.

Tettix granulatus Kirby. April, October.

[1] Presented December 19, 1908.

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Tettix ornatus Say. April.

Tettix triangularis Scudd. May, August.

Tettix arenosus Burm. April, May, June, July, October.

Tettigidea davisi Morse. April, June, August. Also collected at Perth Amboy, N. J., May 31, and Jamesburg, N. J., August 31.

Tettigidea acuta Morse. Male and female taken some years ago in April. Prof. Morse says of these specimens: "These are the first examples I have seen since the preparation of the original description which was based on specimens in the Scudder collection taken by or secured from Uhler and labeled simply 'N. Y.'"

Tettigidea parvipennis Harris. April, May, June, July, October.

Tettigidea parvipennis pennata Morse. This long-winged form has been collected in April, May, June, September.

Tettigidea lateralis Say. March, October.

Tettigidea lateralis polymorpha Burm. This short-winged form has been collected in October.

Charred Wood in a Concretion[1]

BY WILLIAM T. DAVIS

Last October while examining the cliff facing Raritan Bay at Morgan's, N. J., I found a small broken limonite concretion that contained and had been formed about a piece of charred wood. The cavity in the concretion is five-eighths of an inch in diameter, and where the wood has been removed the imprints of five annual rings are to be seen. These impressions were made when the iron concretion was formed about the piece of wood and are very plain. We have found charred wood in the clay at Kreischerville, and Dr. Hollick in the PROCEEDINGS 1: 21. Jan. 1906, gives some interesting observations concerning this wood, which was charred by fire before the advent of man. This concretion, however, is of a much later date.

[1] Presented December 19, 1908.

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Two Additions to the List of Birds Known to Breed on Staten Island[1]

By Wm. T. Davis and James Chapin

The hairy woodpecker, *Dryobates villosus,* though of common occurrence in adjacent parts of New Jersey, is much less abundant on Staten Island, and only occasionally to be seen there even in the autumn and winter. It was not included in Dr. Hollick's "Preliminary List of the Birds known to breed on Staten Island," printed in the *Proc. Nat. Sci. Assn. S. I.* for December 1885, and not until last year did the writers see it on the island during the breeding season.

On the 31st of May, 1908, one was observed in a tall tree in the woods at Buck's Hollow, to the north of the village of Richmond. It called continuously and flew about excitedly as long as we stayed in the vicinity, and evidently had a nest near, but this was not found. The place was visited on two subsequent occasions, the last date being June 7, and each time the woodpecker was in evidence and acted as described. It is therefore quite certain that this species is to be added to the list of those breeding on Staten Island.

Another bird found breeding for the first time on our island last summer is the rough-winged swallow, *Stelgidopteryx serripennis.* Reports of bank swallows' nests at Princes Bay probably refer to the rough-wing, for the bluff there is so stony as to be very unsuitable for excavation by bank swallows. At all events the fact that the rough-winged swallow does breed there was established by our finding a nest in a hole in the bank, on June 24, 1908. The two parents were engaged in capturing small flies along the beach and carrying them up at short intervals to the young, six in number. These nestlings were later photographed by Mr. Howard H. Cleaves, and were apparently reared successfully, for the empty nest was afterward examined. It appeared to have been built in an old kingfisher's tunnel, now only about fourteen inches deep, this shortness being probably due to erosion of the bank.

[1] Presented January 16, 1909.

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The Influence of Climate in Producing Aberrations in Lepidoptera[1]

By George Franck

Since the beginning of the study of insects, or since entomology became a factor in science, the question of variation and aberration in insects has been a matter of vital interest to entomologists. Many volumes have been written in exploitation of various theories and the question is still debatable. Some of these theories are partly substantiated by experimental evidence, gained through the researches of certain eminent entomologists, foremost among whom is Dr. Standfuss, of Switzerland, who, through his valuable experiments, has proven his theories to have the foundation of facts.

The ideas and theories advanced have resulted in two schools or factions. One school adopts the theory that variations and aberrations are dependent on the food plant or the influence of some abnormal condition in the food plant, and supports it by some evidence. The second attributes variations and aberrations to atmospheric and climatic influences and this hypothesis seems to be better supported, at least in so far as practical results count in substantiating a theory.

This article is intended to interest our own entomologists in experimental study, to induce a freer record of their own observations, and to encourage any inclination to clear up this mystery. For illustration I may cite some experiments carried out by prominent entomologists of the Old World, since comparatively little has been done in this country to solve this question. Mention should, however, be made of Dr. O. Seifert, and of Prof. William M. Wheeler, now of the Bussey Institution.

Referring again to the school which endeavors to prove that

[1] Read before Section of Biology, February 13, 1909.

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variations and aberrations result directly from the food plants, etc., I may cite Dr. Paul Salowiou, of Warsaw, whose experiments with pupæ of *Vanessa urticæ,* subjected to poisonous fumes or directly brought into contact with different poisonous substances, are here summarized.

Pupæ painted with tincture of iodine—all died.

Pupæ kept in sulphur powder—all emerged normal.

Pupæ subjected to the fumes of sulphuric ether—all died.

Pupæ subjected to the fumes of oil of mustard—all died.

Pupæ left in water twenty hours—all died.

Pupæ coated with ink—all emerged normal.

Pupæ laid in salt—emerged normal.

Pupæ placed in caustic ammonia—emerged normal.

Pupæ subjected to ammonia fumes—partly died and partly emerged normal.

Of all the above trials not a single instance is recorded crowned with success.

In the experiments of Dr. H. Auel and E. Gerwin on *Psilura monacha* the theory advanced is that *monacha* was originally white, like its near allies, but by gradual evolution attained its present form. Experiments with food plants such as oak, pine, linden, elm, produced normal forms while individuals raised on nut trees, especially walnut, displayed decided variation into melanic or darker forms, in one special case almost black. Auel goes further in claiming that the dark forms bred true exclusively, but he does not state whether the larvæ were again raised on walnut, the same food plant, or not. Nor is Auel alone in this observation, as even Dr. Standfuss claims hereditary conditions for melanic forms.

Otto Meissner, of Dresden, thinks that more aberrations are observed near the larger cities than in the open country. He further claims that sulphuric acid, produced by the burning of hard coal, is responsible, in his estimation, for this fact. Dr. Karl Flach, by experiments, in overfeeding and underfeeding various Saturnidæ (*Saturnia pavonia, S. pyri, Samia cecropia*),

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produced totally different results. While a well-fed specimen was more thickly scaled, darker and richer in color, etc., one that was underfed was lighter in color and thinly scaled.

Many other experiments of European entomologists could be cited, as for instance, with plants subjected to aniline dyes and other abnormal solutions. These experiments have been tried repeatedly without any tangible results. The few instances I have cited, will, however, suffice for the present. I cannot say that I am satisfied with the results attained by this school. In their work the speculative element is predominant and the facts are not conclusive.

Let us now consider the other faction or school, which claims that aberrations are the result of climatic conditions. The work of Dr. Standfuss shows the most remarkable results. By subjecting the pupæ of various species of *Vanessa* to different degrees of heat, he obtained a regular series of aberrations in *V. io*. He recorded series of hundreds of specimens showing variation, some without eye spots, others showing partial suppression of the latter, etc., and some nearly producing the stem form of *V. urticæ*, showing undoubtedly that all these nearly related species can be traced back to one primitive form, similar to *V. urticæ*, which in the course of thousands of years of gradual evolution has produced the now distinct species of *io, polychloros, xanthomelas* and others. *V. antiopa* is also a species that is very likely to show excellent results of this kind, as large series of aberrations, due to subjecting the pupæ to both heat and cold are known to exist. Strange to say, the results of Dr. Standfuss were almost identical, although all specimens under my personal observation could be easily traced to the medium which produced the aberrant forms, viz., heat or cold, the individuals subjected to cold being thinner scaled. Dr. Standfuss has proved, beyond a doubt, that a certain percentage of heat or cold will result in certain definite variations, and has named a number of varieties or forms, which are, so to speak, manufactured to order. This is a remarkable achievement in science and goes far toward proving his ideas correct.

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In a letter to me Dr. Standfuss expresses his satisfaction with experiments on pupæ of Smerinthidæ. When his trials are completed, the results will be published. Dr. A. Kraus found a melanic form of an Orthopterous insect on the Bodensee, evidently caused by a more severe climate than that of the natural home of the type, which is southern Italy bordering on the Mediterranean Sea.

In this country Dr. O. Seifert has obtained results similar to those of Dr. Standfuss regarding the genus *Vanessa,* the only difference being that he regards *V. polychloros* as the stem form. The difference between this species and *V. urticæ* is, however, very small, and further experiments by Dr. Seifert will, no doubt, verify Standfuss' observations. His own experiments on the genus *Arctia* are wonderful, and one interested in this subject will do well to read his various articles published from time to time in the *Journal of the N. Y. Entomological Society, Canadian Entomologist,* and the *Entomological News.*

In a paper read before the Brooklyn Institute of Arts and Sciences and also before the Brooklyn Entomological Society last year, I mentioned my observations on *Satyrus alope* and its forms, which seem to support this theory, and exhibited a number of specimens taken at different elevations in New York State. *Alope* is the lowland type form and as soon as a certain elevation is reached this is replaced by *nephele.* No *alope* is found in the higher regions and no *nephele* in the lower, while intergrades between the two forms can be obtained in numbers about half way up the mountains, thus substantiating the theory that aberrations are produced by climatic changes.

If this paper encourages some of our entomologists to undertake experiments in this particular line, it will have fulfilled its purpose, and I shall most assuredly be pleased to hear of any results that may be obtained in the future.

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Notes on a Captive Saw-whet Owl[1]

By Howard H. Cleaves

On Sunday, February 7, 1909, it was my good fortune, in company with Mr. James Chapin, Mr. Alanson B. Skinner and Messrs. George and Isaac Wort, to come upon the roost of a saw-whet owl, *Nyctala acadica* (Gmel.), near Woodrow, Staten Island. It was in a mixed growth of small cedars and sweet gums that the roost was discovered, the cedars being the trees used chiefly. On the ground under these trees were found numbers of pellets, the size of which told very plainly that they were those of a saw-whet owl.

Mr. Skinner discovered the owl itself only a short way off while the rest of us were examining pellets and looking for other roost trees. It was perched in a cedar and had been intently watching our movements. Mr. Skinner attempted several photographs with his pocket kodak, but, owing to the very poor light which prevailed at that time of day (late afternoon), they were practically useless.

It was decided that an attempt to catch the owl should be made. It could be approached to within about six feet, when it would fly some distance and light again, sometimes in a sapling and again on the ground. After perhaps half a dozen of these short chases had taken place, the owl was gradually surrounded on all sides by the members of the party. Slowly we closed in on it, each person standing perfectly still when the owl looked in his direction, but advancing when the owl turned his head to look at another. He could not watch all at once, and became so confused that a sudden rush from the rear by George Wort resulted in a capture.

Since the time that he lost his freedom I have had the owl in

[1] Presented February 20, 1909.

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captivity, and have made observations on his habits as far as time would permit. An unused chicken house was turned into an owlery on my arrival home Sunday evening, February 7. For a perch I secured a discarded Christmas tree (which was a small cedar), and, after trimming the top, stood it erect in the chicken coop.

The first thing that I tried to feed to the owl was a white-footed mouse, which had also been caught on February 7. The mouse was placed in a metal washtub, the bottom of which was covered with hay. It was night when the mouse was liberated; a lantern illuminated the interior of the coop, and I sat quietly in one corner to watch the proceedings. For a time the owl, through somewhat squinted eyelids, watched me from his perch; but, as the mouse in the hay beneath began to rustle about, his manner changed. His eyes were now focused on the mouse, his feathers were drawn close to his body, and his entire appearance was one of preparation. Suddenly he dropped like a plummet into the tub, and I feared that for the mouse all was ended. The whitefoot, however, acted on the spur of the moment, and the owl came up with empty talons. The poor mouse was now so frightened that it cleared the rim of the tub with a single jump, and scurried behind a pile of boards. Here he was allowed to remain until the following night, when I removed the boards and forced him into the open floor space. The owl sighted his prey at once and dropped instantly from his perch, landing on the mouse with deadly accuracy. After a few feeble squeaks, and fifteen or twenty seconds of squirming of the body and lashing of the tail, the mouse was dead. The owl now turned his attention once more to me. That disinterested expression again came into his eyes, and it looked as though the owl were settled down for an all night vigil with the mouse held under his talons. It was apparent that he would not proceed to devour his victim while I was present in the coop, so I withdrew. In the morning no trace of the mouse could be found.

I was now confronted with the problem of supplying live food

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for the owl. It was evident that he could be kept captive, perhaps for an indefinite period, but where was the food supply to come from? I went about the neighborhood gaining permission from people to look behind the shutters of their houses and the eaves of their barns for roosting English sparrows. In this way four sparrows were caught at night and brought to the abode of the owl. These lasted only three days, however, and it was essential that more food be procured at once.

In the small village of Princes Bay there stands a chapel, in the garret of which I knew that many English sparrows were in the habit of roosting. On the night of February 12 a sparrow hunt was started in this building. The only entrance to the attic is through a trapdoor ventilator in the ceiling, which is many feet from the floor. A table was moved to a point under the trapdoor, and the top of a shaky stepladder placed on this, lacked nearly five feet of reaching the ceiling. With the assistance of Mr. Skinner and Mr. G. B. Davidson the perilous ascent was, after many misgivings, accomplished, and I returned with four sparrows. These were all released at the same time in the owlery, and one of them was caught at once; the others, for the time being, were ignored. The coop was not visited again until Sunday morning, February 14. The three sparrows had all disappeared, and the owl sat composedly in the tree as if he knew nothing whatever about them.

On the following evening another ascent to the loft of the chapel was risked, and the bag resulting from this hunt was made up of three English sparrows and one European starling. The starling is a bird not much smaller than the owl itself, and I was interested to see what would happen following its release in the coop with the saw-whet. The starling was watched intently for some seconds. Then the owl made a strike at him, but the starling was very lively, and was not touched. The owl became more backward now, but finally made another rather undecided rush at the starling, but again failed to get a hold. At this point, one of the English sparrows which was being held in reserve

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escaped and fluttered about the coop. Immediately the owl pursued hotly the sparrow, once chasing him past my head at such close range that the wings of the saw-whet almost brushed my face. Both the sparrow and the starling were now raising such a commotion in the coop that the owl became confused and fastened his talons into the starling instead of the sparrow. The starling made a terrible combination of noises, exercising his lungs to their full capacity; in the meantime flapping his wings, and clawing wildly with his toes. The owl speedily discovered his error, released the starling and went in pursuit of the sparrow, which he soon caught.

After I had had the owl for several days, a way was discovered by which the greater part of the method of devouring the prey could be watched. I have said that the owl would not proceed to eat the sparrows after catching them, while I was inside the coop. At one side of the chicken house there is a shelf, to one end of which the owl generally flew after catching and killing his prey. At the opposite end of the coop is the door through which a person wishing to enter must pass. I found that by placing a lantern midway on the shelf between the owl and the door, one could stand at the door (which was opened a few inches) and, unobserved, watch the owl at his evening meal. The lantern, by the way, was shaded on the side toward the observer. If the sparrow under the owl's claws was very lively, the end was hastened with the assistance of the hooked beak, which would be sunk, catlike, deeply into the throat of the sparrow. After all signs of life in the victim had vanished (which, with sparrows, generally took somewhat over two minutes), eating was begun at the head. The brain cavity seemed to be the thing first sought after, and the crunching and cracking of the skull could plainly be heard at the door. Before the sparrow was dead the owl would hold it in one claw and use the other to stand on. After it was dead the owl stood on it with both feet, thus creating a great leverage, which enabled him to tear off pieces of the victim very easily. These pieces were gulped

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down, together with the feathers which were attached to them. Sometimes, when a very large bit was torn off, some difficulty was experienced in swallowing it, and the facial expressions caused by these efforts were very amusing.

After the head had been entirely removed, the general mode of procedure was to turn sidewise on the victim and, grasping them near the base, tear out the large flight feathers of the wings. Sometimes both the wing- and tail-feathers were removed before work was begun on the body; while at others only the wing-feathers were taken out first, and the tail-feathers later. The victim was invariably held on its back while being eaten. Once I saw the owl do a very pretty thing. In the midst of his work he looked up and seemed to decide to fly to the cedar tree a few feet away. He seized the body of the sparrow in his beak, flew to the cedar and there transferred the sparrow once more to his talons.

Two or three times I have looked into the coop and discovered the owl perched in the tree with the body of a sparrow (with the head missing and the wing- and tail-feathers removed) resting in a crotch near by. Several hours later, however, the body of the sparrow would be gone, proving that it had been laid aside only temporarily, or until the appetite of the owl should become sharpened.

When the supply of live sparrows gave out the owl was tried on a couple of dead ones. One was placed in a crotch in the cedar, and in the morning was found on the floor beneath, untouched. Probably it had been dislodged by the owl lighting in the tree. The other dead bird was tied to the end of a string and dragged across the floor, in an attempt to make it look lifelike. The owl watched it intently, but did not strike. This might have been because the motion of the bird was unnatural, or because the owl could see the motion of my hand in drawing the thread. The sparrow was now detached from the thread and slid along the shelf about a foot under the owl. This was more effective. The owl's vision followed the bouncing sparrow

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until it lay still at the end of the shelf. The owl now assumed a crouching position and suddenly pounced on the dead sparrow, which he devoured later.

All of the pellets thrown out by the owl have been saved. They number nine in all.

These were made from ten English sparrows and one white-footed mouse. Whether this ratio of pellets to food consumed could be followed when collecting pellets under roost trees in the owl's natural environment, I am not prepared to say.

I wish to add further, in regard to the food offered the owl, that he entirely ignored the heads of two fish (flounders), which I tied to branches in the roost.

It is my intention to return this little owl to the patch of cedars from which he was removed two weeks ago. It is hoped that life with him will proceed as before, and that when spring comes he, with his fellows, will return north to mate and rear little saw-whets. His two weeks' confinement has, in a way, brought me close to him. His peculiar mannerisms and varying attitudes and facial expressions have stamped themselves permanently upon my memory; but the thought that will cause the greatest feeling of inward satisfaction will be the readiness with which English sparrows were consumed by this veritable little pellet mill.

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Notes on Staten Island Plants[1]

By William T. Davis

Pinus echinata Mill. Staten Island is the most northeastern station for the yellow pine, and formerly it was represented by a considerable number of trees. The chief groves or localities were on Long Neck; in the valley north of the Richmond Road near Dongan Hills; and quite generally distributed in a narrow belt on the northeasterly side of the Amboy Road from Great Kills to Huguenot. While remnants of these groves still exist, the trees are fast disappearing before the axe and forest fires. What may be considered as an additional station for the tree is in the woods near Betty Holmes' Brook, between Gifford's Lane and Eltingville Road or Seaside Avenue.

Pinus Strobus L. In the same woods mentioned above, but nearer to Gifford's Lane there is a scattered grove of white pines, some of the trees being quite large and evidently old. This species is supposed to be indigenous to the island, and was formerly well represented on Dongan Cedar Hill to the southwest of Clove Valley; at Grant City; and in the woods between Richmond Hill Road and Rockland Avenue. In the last named locality stood the great pine mentioned in the *Proc. Nat. Sci. Assn.* **6**: 14. Jan. 9, 1897. This tree was dead in November, 1904, and the bark was found to have been badly burned about its base.

The most flourishing present grove of white pines, which also contains some fine trees, is at the "Old Comp" north of Richmond Valley. As with the yellow pine, there are occasional isolated specimens to be found in various parts of the Island. It may be added that white pines are to be found in the woods at Helmetta and near Browntown, Middlesex Co., N. J., but they are not at all common in that part of the state.

[1] Presented February 20, 1909.

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Salix tristis Ait. This bushy willow has been found in the sandy grounds at Richmond Valley and at Tottenville; also one bush at Rossville. Last year two small clumps were discovered on Todt Hill near the old iron mine .

Populus nigra L. On the edge of the bluff at Tottenville and not far from the Billopp House, there is a large tree which we have supposed for some years to be a black poplar. As the bluff is being gradually eaten away by the sea, the tree will no doubt ere long be precipitated to the beach below. Since the immediate upland has been uncultivated for a number of years, many shoots from the roots of the old tree have grown sufficiently large to bear blossoms, but they produce only staminate flowers. All of the trees have rather small leaves, not to be distinguished from those of the Lombardy poplar, but the trees themselves are more widely branching, as the photographs taken by Mr. Romeyn B. Hough and myself on March 8, 1908, clearly show. *Populus nigra* has been naturalized from Europe, but is not a common tree.

Rhus typhina L. Several large bushes of the staghorn sumach were found last summer on "Egypt Island" in the meadows back of Midland Beach. This is as far as I am aware the third present locality on the island where there is a considerable number of bushes. The clump of bushes at Uncle Ed. Wood's Brook, Tottenville, discovered over twenty-five years ago still exists, but the plants are dwarfed and in poor condition. Those on the highest part of the Island at Ocean Terrace are of larger growth, but are not numerous, and the locality is being gradually destroyed. A single bush stood formerly on the westerly side of Forest Hill Road northwest of Richmond, and it has also been reported from Princes Bay. Mr. James Chapin has recently found a large bush near Washington Ave., Green Ridge.

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Records of Meetings

Special Meeting, July 21, 1908

The meeting was held in room 309, Borough Hall, New Brighton.
President Howard R. Bayne in the chair.
Thirteen members were in attendance.
The secretary read the following call for the meeting:

Staten Island Association of Arts and Sciences

A special meeting of the Association will be held at the museum in Borough Hall, on Tuesday evening, July 21, 1908, at 8 o'clock, to act on the proposed amendments to Section 2, Article III of the By-Laws, as stated below.

By order of the President,
Arthur Hollick,
Secretary.

The proposed amendments accompanying the call were discussed seriatim and certain verbal changes were moved and adopted.

The proposed amendments were then read and adopted as a whole, as follows:

[*Note.*—Matter omitted from the original is bracketed [ ]; new matter is *italicised.*]

"Section 2. Active members. Active members shall be members of the Corporation and not less than fifteen years of age. Nominations for active membership shall be made and seconded in writing [at a regular meeting of the Association], and the nominees shall be voted for by ballot at the next [regular] *stated* meeting *of the Board of Trustees* or at a special meeting *of the Board* called for that purpose, and three negative votes shall reject. Each active member shall on election pay an entrance fee of three dollars ($3.00) if elected previous to the [regular] *stated* meeting *of the Board* in January, or one dollar and fifty cents ($1.50) if elected at or subsequent to the January meeting and prior to the [regular] *stated* meeting in April, and thereafter annual dues of three dollars ($3.00) payable at the beginning of each fiscal year. The entrance fee shall be remitted if members be elected *at or subsequent to* the [regular] *stated* meeting in April *and prior to the annual meeting of the Association.* Active members shall be entitled to vote at all meetings of

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the Association; to receive free one copy of each publication issued by the Association; [and] to have free admission to the museum and library of the Association *at all reasonable times* [,]; and to *have special terms of admission to* all lectures or other entertainments given under the auspices of the Association."

(The remainder of the Section is unchanged.)

The meeting then adjourned.

REGULAR MEETING, OCTOBER 17, 1908

The meeting was held in reading room of the branch public library at St. George.

First Vice-President William T. Davis in the chair.

About twenty-five persons were present.

The minutes of the annual meeting of May 16, 1908, and of the special meeting of July 21, were read and approved.

The committee on the annual prize competition for work in natural science, open only to pupils in Curtis High School, presented the following:

REPORT

The subject of competition for the school year 1907–08 was "A collection of not less than 100 specimens of Staten Island insects, including at least 50 species and 4 orders."

Five collections were submitted in competition, but only two were in compliance with the conditions.

The collection submitted by Miss Nella Haynes contained about 200 specimens and included 100 species correctly named. Miss Haynes was awarded the prize.

The collection submitted by Miss M. Von Fest showed care and neatness in preparation, especially in connection with the moths and butterflies.

The subject and conditions determined upon for the school year 1908–09 were as follows:

SUBJECT

A collection of the leaves and flowers or fruit of not less than twenty-five native and introduced Staten Island trees, with a written discussion of their respective availabilities for shade, ornamental or memorial purposes.

CONDITIONS

1. The collection shall be made between July 1, 1908, and June 1, 1909, and submitted to the principal of the school not later than June 15, 1909.

2. Each species shall be mounted on a separate sheet of mounting paper, 16½ by 11½ inches in size, accompanied by a label giving the scientific name, the common name if any such is recognized, the locality and

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habitat where collected, and the date of collection. If the leaves and flowers or fruit are collected at different times the date of collection of each shall be specified.

3. The accompanying discussion shall consist of not less than 1,000 words, and the following main topics are suggested:

(*a*) Best trees for certain situations—roadsides, streets, parkways, schools grounds, etc.

(*b*) Trees suitable for memorial occasions—arbor day, etc.

(*c*) What may be done to protect and preserve forest and street trees?

Note.—It is desired that the discussion shall deal especially with local species of trees and local conditions.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick read a paper on "The Chestnut Disease on Staten Island." (Printed in full in this issue, p. 125.)

Mr. William T. Davis exhibited specimens of chestnut twigs and branches illustrating the gross characters of the fungus causing the disease and the effects produced. Also photographs of infected trees, taken by Mr. Romeyn B. Hough on September 29, 1908, and one of a healthy tree growing in the vicinity of Linoleumville, and read "Notes on the Chestnut Fungus." (Printed in full in this issue, p. 128.)

Mr. Davis also exhibited specimens and read an account of "A Visitation of Geometrid Moth." (Printed in full in this issue, p. 130.)

Mr. James Chapin exhibited photographs and read a paper on "Local Notes on Young Owls and Hawks," prepared from field notes taken during the early part of the present year. (Printed in full in this issue, p. 132.)

Dr. Arthur Hollick exhibited specimens of coral pebbles showing the effect of water action, and a fragment of coral rock showing the effect of weathering, from Jamaica, and commented on the ability of the natives to walk barefoot over the sharp, jagged surface.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 21, 1908

The meeting was held in the reading room of the branch public library at St. George.

President Howard R. Bayne in the chair.

About twenty-seven persons were present.

The minutes of the meeting of October 17, 1908, were read and approved.

On motion, the Board of Trustees were authorized, on behalf of the Association, to apply for membership to the Council of Staten Island Clubs.

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SCIENTIFIC PROGRAM

Mr. Charles L. Pollard read a paper on "Observations on Staten Island Moles" by William T. Davis, and exhibited specimens of the species mentioned. (Printed in full in this issue, p. 141.)

Mr. James Chapin exhibited specimens and read "Notes on the Purple Sandpiper and Hooded Merganser," recently captured on Staten Island. (Printed in full in this issue, p. 143.)

Mr. George S. Humphrey exhibited a stuffed specimen of a young white seal, a gift to the museum from Miss W. Humphrey, and gave an account of the seal fisheries in the vicinity of St. Johns, Newfoundland, from whence the specimen was obtained.

Mr. Charles L. Pollard exhibited and commented on the dried carcass of a cat recently found in a heater pipe in a residence on Central Ave., Tompkinsville, presented by Mr. John J. O'Doran.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 19, 1908

The meeting was held in the reading room of the branch public library at St. George.

President Howard R. Bayne in the chair.

About twenty-eight persons were present.

The minutes of the meeting of November 21, 1908, were read and approved.

The president announced the adoption by the Board of Aldermen of the city budget for 1909, including an appropriation of $4,000 for the care and maintenance of the museum and library of the Association.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited specimens of limonite, talc, and chlorite, from Todt Hill, and read a paper on "Geological Notes in Connection with a Recent Lawsuit against the City." (Printed in full in this issue, p. 144.)

Mr. William T. Davis exhibited specimens and read a paper on "Staten Island Grouse Locusts." (Printed in full in this issue, p. 148.)

Mr. Davis also exhibited and read a memorandum on "Charred Wood in a Concretion." (Printed in full in this issue, p. 149.)

Dr. Arthur Hollick discussed the formation of concretions and geodes and the conditions under which each are formed.

Mr. Charles L. Pollard exhibited and discussed a collection of "burls" from stems of ground hemlock trees, *Taxus canadensis* Marsh., collected on Mount Washington, N. H., and donated by Miss S. G. Kingsley.

Mr. James Chapin exhibited a living specimen of a Carolina bat, *Vespertilio fuscus* Beauv., recently captured in a house in New York, where it was preparing to hibernate. Also a preserved specimen of a Georgia

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bat, *Pipistrellus subflavus* (Cuvier), captured in a barn near Richmond. This species migrates southward and does not hibernate here.

The meeting then adjourned.

REGULAR MEETING, JANUARY 16, 1909

The meeting was held in the reading room of the branch public library at St. George.

First Vice-President William T. Davis in the chair.

About eighteen persons were present.

The minutes of the meeting of December 19, 1908, were read and approved.

The curator-in-chief announced the donation, by Mr. Alanson Skinner, of his extensive and valuable collection of articles of Iroquois Indian manufacture, representing implements of warfare and domestic economy, games, ceremonies, etc., now on exhibition in the museum.

Mr. Skinner was called upon and gave a brief account of where and how they were obtained.

On motion a vote of thanks on behalf of the Association was tendered Mr. Skinner for his gift.

SCIENTIFIC PROGRAM

Mr. Charles L. Pollard read a paper, illustrated by diagrams, on "Recent Advances in Our Knowledge of Heredity."

Mr. James Chapin exhibited specimens of pellets disgorged by several species of owls, and read an account of the results obtained from examination of a number of such pellets.

Mr. Chapin opened two of the pellets exhibited and showed the included remains of several meadow mice and a jumping mouse.

Mr. Chapin also exhibited a photograph of young rough-winged swallows and read notes on "Two Additions to the List of Birds Known to Breed on Staten Island." (Printed in full in this issue, p. 150.)

Dr. Arthur Hollick exhibited specimens of *Phragmites phragmites* (L.) Karst., our largest native grass, collected on the border of the salt meadows near Richmond, where it grows to a height of eight or ten feet over quite an area, and forms a conspicuous feature in the landscape.

Miss Mary W. Green exhibited a bedspread, brought from China about 1784 by Captain John Green. It will be displayed as part of the exhibit to be installed by the Arts and Antiquities Committee in the public library at St. George.

Miss Green read the following memorandum:

Captain John Green was born March 30, 1736, O. S., and came to America in his early youth. He was the owner of many ships and a dock in Philadelphia at the time of the Revolution.

With his friend Captain James Craig, whose daughter had married Captain Green's son, he fitted out ships for the Pennsylvania navy, and

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was made captain in the Continental navy. He was taken prisoner by the British, paroled in France, and later he brought to America the Duc du Lauzan (20 guns) bought of France in 1782. Two of the "Letters of John Paul Jones" published by Congress refer to Captain Green.

He was honorably discharged in 1783, and was a member of the New York Society of the Cincinnati.

After the Revolution he resumed his command of merchant vessels.

He was the captain of the first ship carrying the American flag into Chinese waters. The ship was the "Empress of China," and he made the voyage in record time of one year, in 1784, going through the Straits of Sunda.

He brought the first Shanghai chickens to this country and imported the first set of chinaware direct from China. Watson, in his "Annals of New York," says he has one of the original plates, presumably the last of the set. There are two saucers in the family, however.

This spread he must have brought before his last voyage in 1788. It is said that at the same time he brought and sent to General Washington two tiger skins, for which the General thanks him in a letter still in the possession of the family. Being unable to get to the letter I cannot tell its date.

The meeting then adjourned.

REGULAR MEETING, FEBRUARY 20, 1909

The meeting was held in the reading room of the branch public library at St. George.

President Howard R. Bayne in the chair.

About twenty-one persons were present.

The minutes of the meeting of January 16, 1909, were read and approved.

On motion the Board of Trustees were authorized to take such steps as it might consider advisable and feasible for the participation of the Association in the forthcoming Hudson-Fulton celebration in September.

SCIENTIFIC PROGRAM

Mr. Howard H. Cleaves read "Notes on a Captive Saw-whet Owl." (Printed in full in this issue, p. 155.)

Mr. William T. Davis exhibited herbarium specimens and read "Notes on Staten Island Plants." (Printed in full in this issue, p. 161.)

Mr. James Chapin reported on observations on our local fauna during the winter. In a hollow tree at Woodrow a gray screech owl was found in the upper part and a rabbit below.

Mr. Isaac Wort of Woodrow unearthed a jumping mouse on February 6. Chewinks were seen from time to time during the winter.

The meeting then adjourned.

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Proceedings of the Section of Biology

First Meeting, June 17, 1908

At the meeting of the Board of Trustees of the Staten Island Association of Arts and Sciences on June 9, 1908, the organization of a Section of Biology of the Association was authorized. In accordance therewith, the following members met on Wednesday evening, June 17, 1908, at the home of Mr. Charles L. Pollard in Jackson Park, New Brighton, and organized the Section of Biology of the Staten Island Association of Arts and Sciences: Messrs. James Chapin, Howard H. Cleaves, William T. Davis, Philip Dowell, Stafford C. Edwards, Charles L. Pollard.

Charles L. Pollard was elected chairman of the section and Philip Dowell recorder.

It was decided to have occasional field meetings during the summer and regular monthly meetings after October 1. The first field meeting was proposed for Tuesday evening, June 23, at Princes Bay.

Mr. James Chapin showed some plants collected by him during a recent trip in the vicinity of Seaford, Delaware. Of special interest among these were specimens of *Alnus maritima* (Marsh.) Muhl., the seaside alder.

October 10, 1908

The meeting was held in the museum, the program consisting of informal reports by members on their experiences afield during the summer.

Mr. William T. Davis showed a number of interesting specimens with comments on each.

Mr. James Chapin showed a skull and study skin of the wood rat from Newfoundland, N. J., and commented on its occurrence in that locality and on the differences between this species and the

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Florida wood rat; he related some experiences while looking for birds in southern Delaware and New Jersey; discussed the occurrence of fly larvæ on mice, rabbits, etc., and mentioned the discovery of a skull of the star-nosed mole at Woodrow on Staten Island.

Mr. Howard H. Cleaves related some observations on birds made during a trip by boat to Portland, Maine, more especially regarding the number of species seen, the abundance of each kind, and some of their habits of flight and feeding. He showed also some photographs which he had taken during the summer, among which was one of a giant white oak at Oakwood, Staten Island, which had been struck by lightning during the past summer.

Mr. Alanson Skinner told some of his experiences in the Hudson Bay region, where he had spent the summer studying the Cree Indians. He spoke of various amphibians, birds, and mammals which he had seen during the summer, and showed photographs taken by himself of various localities on Staten Island and in New Jersey.

Dr. Philip Dowell reported some finds of violets and other plants on Staten Island and in the vicinity of Washington, D. C. Of special interest was the finding of *Dryopteris cristata* × *marginalis* Dav. near Great Falls, Va., in the vicinity of Washington, D. C., whence it had not previously been reported. He had noted that the ferns were more than usually attacked by a leaf-rolling insect, the larva of which had destroyed the tips of many of the fronds especially of the Christmas fern and various species of *Dryopteris*. The larva was determined by Dr. H. G. Dyar of the U. S. National Museum as a pyralid (*Pyrausta* sp.). This attack on the tips of the fern fronds had also been noticed by Mr. Harold W. Pretz, of Allentown, Pa., and commented on in a letter (Aug. 28), in which he said: "Our ferns near home are in poor condition from the attacks of some larva. *D. cristata* × *marginalis* has suffered very much." It might be added here that the attacks of the larva were made chiefly during the early part of the season.

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Mr. C. L. Pollard reported some interesting observations and experiments on hybridization of the Cynthia moth (*Philosamia cynthia*) illustrated with specimens.

NOVEMBER 14, 1908

The meeting was held in the museum.

Mr. C. L. Pollard announced the death of Dr. James Fletcher, a prominent entomologist of Ottawa, Canada.

The acquisition by the Association of a valuable collection of photographs of Staten Island scenery, presented by Mrs. C. W. Hunt and Mr. George S. Humphrey, was commented on by Mr. Pollard. He stated also that the *University of Missouri Studies* had been added to the exchange list of the Association.

The dried carcass of a cat was shown, which had been found in a furnace pipe at 37 Central Avenue, Tompkinsville. It was presented to the Association by Mr. J. J. O'Doran.

Mr. Pollard showed a new museum exhibit, consisting of various kinds of silkworm cocoons, and illustrating the characteristic methods by which various members of this family build their cocoons.

Mr. William T. Davis exhibited a collection of most of the species of *Xiphidium* occurring in the eastern United States. He mentioned the fact that the length of wing is not a good specific character in this genus. He commented on the invalidity of certain species, which had been described on the basis of this character; and also on the occurrence of *X. strictum* at Arrochar, Staten Island. He showed also an insect box of his own make, lined with corrugated paper instead of cork or turf. He stated that Dr. W. A. Murrill, of the N. Y. Botanical Garden, had identified the fungus exhibited at the last regular meeting of the Association as the true chestnut fungus, and that the jelly-like streamers shown by this specimen were mentioned by Dr. John Mickleborough in *Conservation* **14**: 585. 1908.

Mr. Howard H. Cleaves read a paper on "Comments on the Contents of a Grebe's Crop" (published in full in this issue,

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p. 140), and described the menhaden fishery as carried on in the lower bay.

Dr. Arthur Hollick commented on the same fishery.

Mr. Alanson Skinner showed a Delaware Indian mortar of wood hollowed by fire, from Marlton, Burlington Co., New Jersey; also a red screech owl caught in a hollow apple tree on Richmond Hill, Staten Island, November 14, 1908.

Mr. James Chapin showed an abnormal specimen of the ring-necked snake, *Diadophis punctatus,* captured in New Brighton on May 17, 1907. The whole of the upper parts of this specimen are usually light in color and there is a narrow yellow line along the middle of the back. He showed also an adult female and a young female red-backed mouse, *Evotomys gapperi,* trapped in a small white cedar swamp at the south end of Lake Hopatcong, New Jersey, on August 29 and 30, 1908; also a female long-tailed shrew, *Sorex personatus,* from Helmetta, New Jersey, September, 1908. The skin of a purple sandpiper, *Arquatella maritima,* killed at Crooke's Point, November 3, 1908, was also shown.

DECEMBER 12, 1908

The meeting was held in the museum.

The chairman announced the death by drowning, on December 6, of Joseph H. Painter, Botanical Assistant in the United States National Museum.

The program for the evening had been announced, in advance, in the notices of the meeting, as a symposium on Natural Hybrids among Ferns and Other Plants, the subject to be introduced by Mr. William R. Maxon, Assistant Curator in the United States National Museum. Mr. Maxon first mentioned the fact that he had noticed the fronds of *Dryopteris simulata* Dav. in Maryland attacked by an insect, which had spun a fine web and drawn the pinnæ of the tips together. He spoke next somewhat at length on fern hybrids, referring to the chances for hybridization among certain kinds of ferns and offering a number of suggestions and questions for consideration. He called attention to the fact

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that our *Dryopteris boottii* (Tuck.) Und. has often been referred to the hybrid long known in Europe and described by Milde as *Aspidium spinulosum* × *cristatum*. He mentioned *Dryopteris cristata* × *marginalis* and the bigeneric hybrid *Asplenium ebenoides* as well known examples of hybrids among ferns. He referred to Miss Margaret Slosson's experiments in which she succeeded in crossing the prothallia of the parent species and producing *Asplenium ebenoides* and *Dryopteris cristata* × *marginalis*, thus proving these to be hybrids. These were the only native American fern hybrids known until recently; except, possibly, *Asplenium pinnatifidum*, which has been supposed by some to be a hybrid. He next made a few remarks on the recent paper "New Ferns described as Hybrids in the Genus *Dryopteris*," in the *Bull. Torrey Club* 35: 135–140. 20 Ap. 1908. In connection with *Asplenium ebenoides* he reviewed some of the main points in his paper on this fern written some years before (*Bot. Gaz.* 30: 410–415. Dec. 1900). One of the main points brought out in this connection is that although sterility is in general a characteristic of hybrids it may not be persistent in the case of plants long established in a certain locality. Thus, for example, *Asplenium ebenoides* was found growing in abundance at Havana, Hale Co., Alabama, and this could not be well accounted for except on the supposition that the fern was fertile in this locality. This idea of hybridity clears up some of the difficult questions in regard to the identity of many specimens of ferns that have been collected and many that have been met with in the field.

Dr. Philip Dowell replied to some of the questions raised. In connection with the question whether the chances for hybridization are better in the north than in the tropics it should be kept in mind that some species seem to show greater tendency to hybridize than do others. To the question whether the recent work on hybrid ferns be a result of more intensive work in the field, he replied that his own results had been obtained as undoubtedly due to intensive field study. Occasional specimens of hybrid ferns were found in the larger herbaria, but many more

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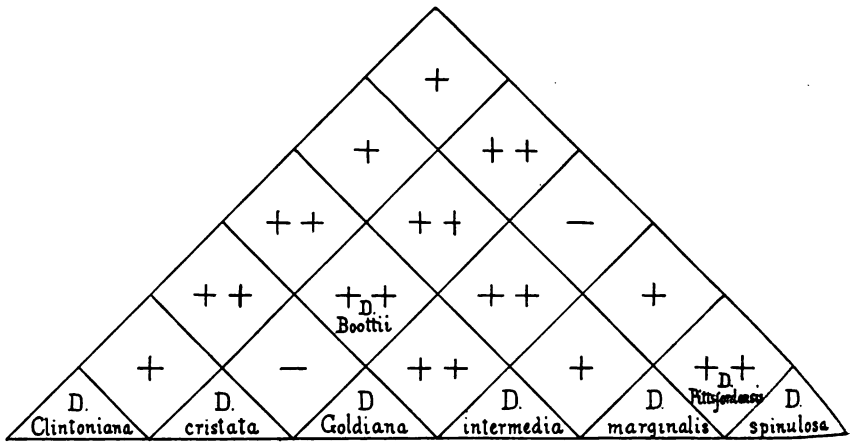
had been found by close observation in the field. In reply to the question whether the limits of variation of these hybrids had been closely studied, and whether the hybrids showed as great variation as the putative parents, it was stated that the hybrids showed a wider range of variation. In some cases it would be difficult to state the correct relationship of a probable hybrid without having a number of fronds from the same plant or from similar plants. In this connection it should be stated that when a specimen shows undoubted close relationship to two different species and stands intermediate in characteristics, sharing the characteristics of the two species, it is very likely that the specimen in question is a hybrid between the two species whose characteristics it shares, and we are justified in describing it as a hybrid. If some one else chooses to describe the specimen in question as a species, or wishes to consider a hybrid a species, he may be entitled to his view. But if he denouces these hybrids as such because they have not been artificially produced and thus have not been proved to be hybrids let him also prove that they are not hybrids. He showed also a diagram representing the fifteen possible hybrids between six species of *Dryopteris,* thirteen of which he had seen (marked with the + sign) and eight of which had been described (marked with ++).



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Mr. Charles L. Pollard was the next speaker. He took the stand that we have no right to assume hybrids on the basis of mere appearances and characteristics suggesting relationship, and that the burden of proof rests with those who assume hybrids.

Mr. William T. Davis exhibited specimens of hybrid oaks and reputed parent species and pointed out some interesting facts in connection with them. Among the specimens were: *Quercus heterophylla* Michx., *Q. marylandica* × *nana* (*Q. brittoni* W. T. Davis), *Q. marylandica* × *phellos* (*Q. rudkini* Britton), *Q. digitata* × *phellos*, *Q. nana* × *phellos*. These served as valuable material illustrating the subject of plant hybrids.

JANUARY 9, 1909

The meeting was held in the museum.

Mr. Alanson Skinner reported having seen some twenty or thirty pickerel frogs, *Rana palustris*, in a spring at Woodrow, Staten Island, earlier in the day. They were rather sluggish, but were not covered up by leaves or any other material. He stated that he had found numbers of green frogs, *Rana clamitans*, in former years hibernating in deep holes in the upper part of Palmer Run in the Clove Valley. Here pipes running from the pumping station of the water works carried warm water which was discharged near the pools and kept the water warm. Others were found under the pipe and close to it.

Mr. C. L. Pollard stated that the pine lizards, *Sceloporus undulatus*, which Mr. Skinner presented to the Association about October 1, 1908, were still alive and active, though they had eaten nothing while in captivity, and they showed no tendency to hibernate, probably on account of the high temperature of the room.

Mr. William T. Davis exhibited some tubers of a species of *Helianthus*, from Oakwood, Staten Island. They were found in numbers under a large log on the edge of the salt meadows. He showed also two specimens of *Orchelimum pulchellum* from Dennisville, Trenton, and Helmetta, New Jersey. This he had recently described as a new species and stated that it is the most

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brightly colored *Orchelimum* in our vicinity. Other specimens of the same genus, including *O. erythrocephalum*, were also exhibited.

Mr. James Chapin showed a skin of Brunnich's murre, *Uria lomvia*, which was killed off Great Kills, Staten Island, in the Lower New York Bay, about December 27, 1908, by Mr. Charles Schapp, and commented on the irregularities of the southward migration of this bird. The last important migration was in the winter of 1899–1900, when it was reported to have gone as far south as Virginia. In the fall of 1899 several of these birds were killed in the Lower Bay by Mr. Melville Decker. This year there is apparently a similar abundance of Brunnich's murres in New York Bay, for one was seen off the Battery, by Mr. Chapin, on December 25, 1908, and on the same day about ten birds answering to this description were observed by Mr. Rogers in the Lower Bay and near Sandy Hook. Mr. Chapin also announced that he had found five skulls of *Blarina parva* in about fourteen owl pellets, found at Green Ridge, Staten Island, on May 13, 1908.

Mr. Pollard announced that he hoped soon to have Dr. L. O. Howard as a guest of the Association. He remarked on a recent lecture in Brooklyn by Prof. Edward B. Poulton on mimicry.

This was followed by a discussion on mimicry and protective coloration.

FEBRUARY 13, 1909

The meeting was held in the museum.

Messrs. George Franck and George P. Engelhardt were present as guests.

Mr. C. L. Pollard stated that he had attended the Darwin Centenary exercises at the American Museum of Natural History, on February 12, and suggested that each member attend the exhibition, which would continue until March 12.

Mr. George Franck read a paper on "The Influence of Climate in Producing Aberrations in Lepidoptera" (published in full in this issue, p. 151).

A general discussion ensued on the subject of variation and sex determination.

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Mr. William T. Davis read from an article by David Starr Jordan in the *Independent* for February 11, 1909, entitled "Darwinism Fifty Years After," referring to Dr. Arnold Ortmann's words that the four factors of evolution, variation, inheritance, selection, and separation were all concerned in the formation of new forms or species.

Mr. Howard H. Cleaves spoke of the saw-whet owl caught at Woodrow recently and kept in captivity in a chicken coop. A white-footed mouse placed in the coop with the owl was caught by the owl while Mr. Cleaves was present; an English sparrow was also caught by the owl under the same circumstances, and the method of devouring the sparrow was observed by Mr. Cleaves. The owl begins at the head and tears off the wing-feathers. A flashlight photograph was shown of the owl while holding the sparrow in the act of devouring. He exhibited pellets that had been disgorged by the owl, showing something of its diet.

Mr. G. P. Engelhardt remarked on the similar eating habits of the European falcon.

Mr. Pollard exhibited skins of weasels showing winter and summer pelage.

Mr. Stafford C. Edwards exhibited a specimen, presumably a fungus growth on cat dung, found in a cellar, the growth resembling fine black hair.

Mr. Alanson Skinner remarked on having seen a flock of quails at Princes Bay; also a chewink on February 5. In a hollow tree at Woodrow he had found a screech owl in the upper part and a rabbit below. He remarked that rabbits are greatly increasing in numbers. He had recently found at Princes Bay a dead opossum, a very large specimen. Opossums were apparently decreasing in numbers on Staten Island, but increasing on Long Island.

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Publications of the Association

1. Proceedings of the Natural Science Association of Staten Island

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

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Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names. Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. Proceedings of the Staten Island Association of Arts and Sciences

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents and Index, is as follows:

Part I, June–December, 1905, pp. 1–20, issued April 10, 1906.
Part II, January–May, 1906, pp. 21–69, issued July 9, 1906.
Part III, October–December, 1906, pp. 71–92, issued April 17, 1907.
Part IV, January–May, 1907, pp. 93–136, issued September 20, 1907.

Volume II, Part I, October 1907–January 1908, pp. 1–46, issued October 17, 1908.

Volume II, Part II, February–May, 1908, pp. 47–124, issued September 30, 1909.

Volume II, Part III, July 1908–February 1909, pp. 125–177, issued August 18, 1910.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i–xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i–xxxvii, 1907), will be sent free on application.

3. The Museum Bulletin

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Sent free on application.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

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VOL. II March–May, 1909 Part IV

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

[Formerly THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND]

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES
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VOL. II MARCH–MAY, 1909 PART IV

Lowestoft Ware[1]

BY MARY OTIS WILLCOX

Every one of us knows and loves the pale fragile bluish-white bowl or teapot which tradition tells us "our grandmother brought from home." This china is known as "Lowestoft" and is to be found in quantities all along our eastern seaboard, within easy reach of the ships that brought it. Brought it—but from where? That was the mooted point, and one that was hotly contested by the china authorities of the last century.

Lowestoft is a town on the east coast of England on the North Sea. As early as 1756 a soft paste was made at Lowestoft in imitation of Delft ware, and decorated in blue and white. Some of these pieces are signed and dated and are to be found in museums in England. In the year 1770 we have the following advertisement, "Clark Durnford, Lowestoft China Warehouse, No. 4 Great St., Thomas the Apostle, Queen St., Cheapside, London, where merchants & shopkeepers may be supplied with any quantity of said ware at the usual prices. N. B. Allowance of twenty per cent for ready money."

[1] Presented before the Section of Art, March 10, 1909.

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Also there is in existence the original account of a piece of Lowestoft purchased by Josiah Wedgewood, as usual eager for new or better methods for his trade.

But the Lowestoft factory came to an end in 1803 or 1804 owing, it is said, "partly to the severe competition of the Staffordshire potters, partly to trade losses, one of which was the seizure by Napoleon in Holland of several pounds worth of the merchandise in that country," and until recently no traces of a factory in Lowestoft had been found.

Mr. Jewett says "the collector will be able to distinguish immediately between those examples painted at Lowestoft on Oriental body and those which were potted and painted there."

For that was the question over which the collectors wrangled. Did the Lowestoft potters import the undecorated pieces and then paint them, or did they bake the clay also at Lowestoft?

The color of this china is of a pearly tint not quite so blue as the ground of the older Chinese wares. The shapes are exquisite and the colors harmonious. The cups are usually low and of a fat wideness without handles, and the saucers are of the same general shape. The coffee cups are taller and thinner and have handles ornamented with little knobs. The coffeepots and hot milk pitchers are tall, long-necked and graceful, with perky little spouts, and handles stuck on as if by an afterthought. They have lids and these lids are surmounted by a gilded strawberry and the three-lobed leaf of the strawberry plant. The teapots are oblong with flat tops and straight sides. The tea caddies look like the old time tombstone with the addition of a little neck surmounted by a lid matching that of the coffeepot. The cream pitchers are urn-shaped with queer spouts and awkward handles.

The decorations are familiar to all of us; the little delicate red borders of lines and dots and little festoons supported at intervals by a full blown pink English rose and little dabs of green suggestive of leaves. Sometimes the lines and dots of the border resolve themselves into little red vines. Pieces so decorated have either the same rose at regular intervals, but

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larger, on the outside, or else, growing from a funny flat flowerpot or basket, the red rose and many buds or smaller blossoms.

Other pieces have the beautiful deep blue border, ornamented with lines and dots and conventional oak leaves or stars in gold on the blue, and bunches of gold-veined blue roses and pinks and other familiar flowers. These blue and gold bordered pieces often have monograms and coats of arms in gold and blue and were made of course for the original owner. Others have on their sides medallions in sepia framed in the same blue and gold of the border. The medallions are true English landscapes, with houses in which Miss Edgeworth's characters might have lived, and the trees are round, full-topped specimens of the English oak, not the pagodas and scraggy willows of the Chinese. Sometimes these little picture decorations are like pen and ink sketches in black and white, but they always preserve the characteristic features of their European surroundings.

I find in the Metropolitan Museum a tea set of Lowestoft, with the blue border besprinkled with gold stars, and a graceful monogram in blue and gold script on every piece. There are no samples of the flowerpot decoration in red and green. These pieces are in the case of English chinas, but the label says Lowestoft is a misnomer as this ware is Oriental in body and decoration.

There are in the Boston Museum of Fine Arts three pieces of "Lowestoft certified to have been made in England." They are less delicate than the pearly hard paste porcelain. They are of a creamy tint and the decorations are bands and veins of pink and gold and bunches of flowers, roses, etc., in their natural colors.

The Lowestoft china was certainly a favorite with our colonial ancestors both north and south. The magnificent dinner service decorated in blue and gold and green with the badge of the Order of Cincinnatus, a piece of which is on exhibition in our loan collection, the property of Mrs. Geo. Wm. Curtis, is one of three imported by Mr. Samuel Shaw, a china merchant of Boston.

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He served in the Revolution as Aid to Gen. Knox, and at its close he imported one set for Gen. Washington, one for Gen. Knox, and the other he kept. The latter was for many years on Staten Island, the property of the great nephew of the importer. At Mrs. Shaw's death the china was divided among her daughters. I read of two complete sets of china that belonged to Mr. Elias H. Derby of Boston, a very wealthy merchant of that city at the beginning of the last century. His wife came from Hingham, Mass., where with some of his wealth he endowed the Derby Academy, an institution of learning which still flourishes. I know of two saucers and a cup of Lowestoft which probably were part of these sets. One has on it the maiden initails of Madam Derby as she was always called, and the other is decorated with the fine black landscape.

The variety in the decoration of this china is equaled only by the various localities in which it is found, up and down the Atlantic seaboard, treasured in corner cupboards or tucked away on the top shelves of private families, or displayed in the cases of museums, its delicate colors and quaint shapes ever a pleasure to the eye, and the stories of its importation ever a delight to the imagination.

Many of these pieces bear the coat of arms and the initials of the importer himself and yet the place of its manufacture seemed to be shrouded in mystery. And the authorities differ. Did our seagoing forebears get the china in England or the East? Was the body made in China and decorated in Lowestoft? Or did the Lowestoft potters make the body and decorate it, at home? Or did the Chinaman with his aptitude for copying make the body and decorate it after a copy brought from the western world.

Mr. Owen in "Two Centuries of Ceramic Art in Bristol," says: "The tradition that such ware was made in Lowestoft in 1775 rests upon evidence too slight to be worthy of argument. The East India Company imported into England large quantities of porcelain for sale. This particular ware was simply in form

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and ornamentation only a reproduction by the Chinese of English earthenware models. The ill-drawn roses, the coarsely painted baskets of flowers, the rude borders of lines and dots, are literally copied from the inartistic painting on the English earthenware of bygone days."

Mr. Chaffers, another china authority, says: "There is such a peculiarity in the form and quality of the Lowestoft porcelain that we are surprised any one at all conversant with, or accustomed to see, collections of china could ever mistake it for Oriental. We are now speaking of the body only; of course the decoration is still more conclusive. Any one who has paid attention to the ornamentation on the Lowestoft china cannot fail to have observed the peculiar touch of an artist who painted the flowers upon it, especially the rose which we so frequently find. These flowers were painted by Rose, and one striking peculiarity in his mode of representing this flower is the appearance of its having been plucked from the stalk and dropped upon the surface, the stalk being seldom represented."

I find that Mr. Prime writes: "There is a large class of porcelains decorated with beautiful but generally stiff bouquets and with vine borders in high relief, which are Oriental and are classed by some collectors as porcelain of the Indies. These are supposed to have been made on special patterns furnished to the Oriental factories by the East India Companies. They resemble European work in the decoration and many of the Lowestoft paintings seem to be imitations of these. It is therefore necessary to be very cautious in classifying wares as of Lowestoft fabric."

Then I find that Mr. Elliott in his "Pottery and Porcelain" says that "much of this ware which is supposed to have been imported from China was really made in Lowestoft," and that "Some of the forms and decorations made at Lowestoft are so like those made in China that it has been almost impossible to distinguish them."

What conclusion do we reach?

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The clay was brought from China and decorated in England? The clay was baked and decorated in Lowestoft? The East India Company took earthenware patterns from England to China and had the designs copied, often adding monograms or coats of arms?

These are the three prepositions; all are answerable.

If the clay was brought to England why have we not samples of such porcelains *unpainted,* which we have not.

If the china was purely a product of Lowestoft then there must be evidence that the Lowestoft factories used such hard paste. which there is not.

If the East India Company took patterns to China they were not the common pieces of English make. But they undoubtedly did take designs and pictures, and the ingenious mind of the Oriental copied them faithfully, only occasionally indulging his originality in a queer knob or spout.

Certainly it was a favorite ware with our grandparents, and the merchants who dealt with the East imported it in quantities for the tasteful people of the day.

Since this little paper was written and the loan collection installed in the museum, the reason for the confusion as to the origin has been made clear to us. Years ago, Mr. Chaffers, who is quoted above, visiting the town of Lowestoft, ran across several pieces of the frail bluish porcelain decorated with the coats of arms of neighboring families. The owner assured him that these pieces had been made in the old factory, and he therefore gave the name of "Lowestoft" to the ware.

It is also a matter of great interest to learn that not long ago under a portion of a brewery in Lowestoft there were found several moulds and many fragments of the real English ware.

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Local Notes on Migratory Birds[1]

By James Chapin

The movements of the migratory birds of the Eastern States are, with few exceptions, so well known that only the minor irregularities now attract our special attention. The following notes are submitted, therefore, for the benefit of local bird students, or the authors of future lists of the birds of the vicinity of New York.

Uria lomvia. Brunnich's murre is noted for the irregularity of its southward migrations, which ordinarily do not reach Long Island, but sometimes extend as far south as North Carolina. One of the most recent of these unusual migrations took place in the winter of 1899–1900, when these murres are reported to have reached Virginia. During that winter several were killed in the lower New York Bay by Messrs. Almar and Melville Decker, of Tottenville, Staten Island; and one of them was presented to the American Museum of Natural History (No. 11581). It is labeled as having been collected at Giffords, Staten Island, on November 18, 1899.

During the past winter Brunnich's murres have been again seen in our vicinity. On December 25, 1908, from a Staten Island ferryboat, I watched a murre, presumably of this species, sitting on the water just off the Battery. Mr. Charles H. Rogers saw a number in the Lower Bay on the same day, as recorded in *Bird Lore's* Christmas Census. Two days later a dead specimen of *U. lomvia* was sent to me, in the flesh, by Mr. Charles Schopp. It had been killed off Great Kills, and I was informed by Mr. Schopp that others were seen the same day. On January 10, 1909, Mr. S. H. Chubb tells me, he saw two murres from a Staten Island ferryboat, in the Upper Bay.

[1] Presented March 20, 1909.

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Porzana carolina. A male Carolina rail, in the plumage of an adult, was shot by Mr. W. Schulz at Jamaica Bay, Long Island, on December 29, 1905, and presented to the writer a few days afterward. Its left leg was slightly kinked, where it had evidently been broken, but was perfectly healed at the time of its death.

Oxyechus vociferus. The kildeer is quite unusual on our island, though it breeds not uncommonly in certain parts of New Jersey. The only examples I have seen on Staten Island are two in number, the first of which was shot on the beach at Oakwood on November 29, 1906, and was exhibited at the meeting of the Staten Island Association of Arts and Sciences in December, 1906. The second was observed at Wolfe's Pond, Princes Bay, November 22, 1908. Though not molested by the writer, this bird evidently met its death soon afterward, for a kildeer in an advanced stage of decay was sent to me about a week later from the same locality. None of the private collections of Staten Island birds I have yet examined have contained any kildeers.

Asio wilsonianus. According to Mr. Isaac Wort, of Woodrow, Staten Island, long-eared owls were formerly much more common on Staten Island than now, occurring at times in large flocks, and furnishing easy targets for gunners, who were fond of practising on them. Mr. Wort tells me that he found a nest in a cedar, near his home, about 1903 or 1904. The writer has seen single long-eared owls at Great Kills, Staten Island, on April 8, 1906, and March 23, 1907, and their presence at such late dates in the spring might indicate that a pair still nested there.

During the past winter (1908–9) though no live owls of this species were observed, the feathers of two individuals killed perhaps by barred owls (*Strix varia*) were found near Princes Bay on December 20, 1908, and January 3, 1909. That the barred owl does eat other owls of such size is shown by my finding the bones of a long-eared or short-eared owl in some pellets picked up under a barred owl's roost at Annadale, in March 1908.

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In a cedar grove, near Richmond Valley, on January 3, 1909, some long-eared owls' feathers sticking to the trees, and pellets lying under several of the cedars showed that the grove had recently sheltered some of these owls, though none were to be seen either on this date or the following Sunday.

Dryobates villosus. The breeding of the hairy woodpecker on Staten Island was discussed in a recent number of the PROCEEDINGS. Its rarity here in winter as well as in summer is shown by the fact that the writer, though he has made weekly excursions on Staten Island during the past autumn and winter has noticed but one hairy woodpecker, near Huguenot, on February 21, 1909.

Loxia curvirostra minor. About five crossbills were observed in Robinson's Woods, Great Kills, Staten Island, on December 20, 1908, and about the same number, in the same place, on the 25th.

Acanthis linaria. Notes on the occurrence of redpolls on Staten Island in the winter of 1906–7 may be found in the PROCEEDINGS for March, 1907. On December 20, 1908, a flock of six or eight was seen at Great Kills.

Spinus pinus. During the winter of 1907–8 no pine finches were seen on Staten Island by the writer, but the next winter has again witnessed the abundance of these irregular birds. They have been quite numerous from early November to the date of writing, and are often seen on the beaches, eating the seeds of a goldenrod (*Solidago sempervirens*), as well as in the uplands, where the alders, birches, and sweet gums furnish them with food.

Passerculus sandwichensis savanna. On December 25, 1908, two Savanna sparrows were seen on the beach near Oakwood, Staten Island. This is my second winter record for the island, the first being that of a single individual taken at the same place about January 1905.

Ammodramus maritimus. Seaside sparrows, though very common breeding birds in our salt meadows, generally depart during early November. Mr. Witmer Stone, in the "List of the

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Birds of Eastern Pennsylvania and New Jersey," gives a record of a seaside sparrow in southern New Jersey on February 22, but I can find no winter records from further north. On February 9, 1908, as I was walking along the beach near Oakwood, Staten Island, I saw one feeding near the water's edge. At my approach it ran under a cake of ice, but soon flew out again and lit on the sand, where it was "collected." It was an immature female, and had, so far as I could see, no physical defects to prevent it from moving southward for the winter.

Spizella pusilla. Two field sparrows were shot, and several others seen, at Rossville, Staten Island, on February 22, 1906. As field sparrows do not pass northward until about a month later, these individuals had probably spent the winter in our neighborhood. On January 24, 1908, two more were seen at Watchogue, and, on February 16, 1908, there were four in a hedge near St. Andrews Church, at Richmond.

Pipilio erythropthalmus. Two, or possibly three chewinks, have spent the whole of last winter on Staten Island. Mr. W. T. Davis and the writer were somewhat surprised, on November 8, 1908, to see a male chewink near Huguenot, as we supposed the last of these birds had departed for its southern tour at least a month or two earlier. A week later we found a pair of chewinks near Richmond Hill. On December 13, the call of a towhee, repeated several times, was heard distinctly near Richmond Hill, and on December 20 a male towhee was seen near Huguenot. The one at Richmond Hill was seen or heard no more after the 13th of December, but on January 24 another, or perhaps the same individual was observed in some cedars about half a mile to the northward, near Buck's Hollow. Here the characteristic call note of a chewink was again heard on February 7 and 14, showing that the bird was still present.

At Huguenot a chewink was seen by Messrs. Howard H. Cleaves and Alanson Skinner on February 7; and on February 21 Mr. Cleaves found two chewinks in the same locality, both of which had perhaps been there all winter, though we had previously seen but one of them at a time.

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Recently Introduced Grasses and Sedges[1]

By Arthur Hollick

In the vicinity of Arlington Station, at the end of the S. I. R. T. Railroad is an extensive area of filled in ground, formed by the dumping of garbage, ballast, and car sweepings over the surface of the salt meadows. In the ground thus formed a large number of introduced plants have gained a foothold. Many have become permanent residents of our island but others will doubtless not exist through the coming winter.

Of special interest are a number of grasses and sedges, most of which are apparently thoroughly established there and are rapidly spreading. In the following list those species marked with an asterisk (*) have not heretofore been recorded from the island:

Zea mays L. Indian corn.
Avena sativa L. Oats.
**Sorghum halepense* Pers. Johnson grass.
Phalaris canariensis L. Canary grass.
Panicum miliaceum L. Millet.
Ixophorus italicus (L.) Nash. Italian millet.
**Capriola dactylon* (L.) Kuntze. Bermuda grass.
Eleusine indica (L.) Gaertn. Yard grass.
**Eragrostis major* Host.
**Cyperus compressus* L.
**Cyperus rotundus* L.

The latter two species are natives of the Old World and, so far as I am aware, have not heretofore been definitely recorded in the United States north of Virginia, although they occur southward to the Gulf of Mexico.

[1] Presented March 20, 1909.

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A Maple Tree Fungus[1]

By Arthur Hollick

Until about six months ago a row of large silver maples, *Acer saccharinum* L., was a prominent feature along the border of the Heineken property, now owned by Dr. Carl Walser, at the corner of Richmond Terrace and Livingston Place, Sailor's Snug Harbor. They ought to be still in their prime, but about twenty years ago they began to show indications of waning vitality, which became more and more evident in recent years. The ends of the branches and finally the branches themselves died and were broken by wind and snow, and last autumn the trees were cut down.

The trunks of these trees, at a distance of about three feet from the ground, have an average diameter of 32 inches. The annual rings are somewhat obscure toward the exterior, but they apparently average about fifty.

The main trunks are sound and healthy, without any indications of decay, but I have a section of one of the large limbs, about sixteen inches in diameter which tells a different story. About thirty-six annual rings are distinguishable. The first inner eighteen are relatively wide and are well defined, indicating a normal, vigorous growth during the first eighteen years, but after that they become narrower very rapidly, and near the margin they are so close together that it is practically impossible to discern them as separate rings. Evidently the tree was rapidly declining in vital energy, and the growth was very slow in recent years. About twelve inches represents the increase in diameter during the first eighteen years of the limb's growth. About four inches represents the increase during the last eighteen years. In other words it grew three times as fast in the first half of its life as it did in the second half.

[1] Presented April 17, 1909.

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Another fact may also be noted. Close to the outer margin at one side of the section may be seen a knot hole, around which and extending beyond the center of the section, is a circular area of discoloration with finger-like extensions, similar to the conventionalized rays of a star, reaching outward towards the margin at the opposite side of the section. This discoloration is due to the mycelia or roots of a fungus, *Pyropolyporus igniarius* (L.) Murrill, which have entered into the interior from the knot hole, following around the annual rings and branching out along the medullary rays, destroying the tissues and gradually causing their disintegration and decay.

The knot hole, originally due to a broken branch, afforded a convenient breeding place for the spores of the fungus, whose mycelia slowly made their way into the interior. The fungus proper, or sporophore, when present, grows on the exterior, in the form of a hard, woody hoof- or shelf-like excrescence, having a furrowed appearance as it grows old, due to successive accumulations of annual layers, but I failed to find any indication of a sporophore in this instance. This fungus is not confined to the maple, but attacks also the oaks, beech, birch, apple, and other species of trees. An excellent description, with illustrations, may be found in "Studies of Some Shade Tree and Timber Destroying Fungi," by George F. Atkinson, in *Bulletin* no. 193, Cornell Univ. Agric. Exp. Station, Botanical Div., June 1901.

Now there is one point of special local interest in connection with this subject which deserves serious consideration. We have all noticed with sorrow how all of the trees and in fact nearly all kinds of vegetation along the North Shore, from New Brighton to West New Brighton, have been either blighted or completely destroyed by the smoke and gases emanating from the factories on the New Jersey shore on Constable Hook. These particular maple trees which we have under consideration are merely a few of the many examples that could be cited. Their destruction is primarily due to this cause. Year after year they have

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been partially or completely defoliated, sometimes two or three times in a season, by the sulphurous fumes from the factories, especially when these fumes were converted into sulphuric acid by the moisture accompanying rain or fog. The result was inevitable. The vitality of the trees was lessened from year to year by the constant effort to recuperate. The twigs and then the branches gave up the struggle, and when these died and were broken off the resulting wounds became the starting points for the fungi which completed their destruction. Most fungi begin their destructive career in this way and we have every reason to believe that these maples and many other trees along the north shore, recently dead or showing evidence of early dissolution, would still be vigorous and clean limbed except for the blighting effect of the factory fumes. Their final destruction by fungoid growths must be regarded as purely incidental and secondary.

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Additions to the List of Staten Island Orthoptera[1]

By William T. Davis

With the additions here recorded the list of Orthoptera so far collected includes ninety species and named varieties. The original list was published in *Entomologica Americana*, **5**: 78. Ap. 1889, since which time additions have been noted in the *Proceedings of the Natural Science Association of Staten Island*, and in these Proceedings.

As in every branch of zoölogy the variable forms are of much interest and there are several Orthoptera native to the island that might be considered as either species or varieties with apparently equal propriety. All of the forms, however, may be separated from one another by at least some characters, and so it is quite proper that they should be named.

Melanoplus tribulus Morse. July, September.

Scudderia texensis S.-P. August, September.

Scudderia furcata Brunn. August, September.

In the original list, 1889, printed before Mr. Scudder's revision of the genus was published, *S. curvicauda* De Geer was given. While I have found this species at Jamesburg, N. J., and while it no doubt occurs on the island it must be omitted from the list for the present.

Xiphidium ensiferum Scudder. Some specimens have been collected on the island, which are doubtfully referred to this species, and which may be only a large form of *X. brevipenne*.

Xiphidium strictum Scudder. This species was found at Arrochar in 1904 by Mr. Lewis B. Woodruff. In September, 1908, numerous examples were found on the dry and rather barren hill where it occurs most numerously. While nearly all of the individuals have abortive tegmina and wings about three or four

[1] Presented April 17, 1909.

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mm. in length, a few have these parts well developed. In a great many specimens collected, only two or three were intermediate in this respect, that is to say, they are either without wings or are well able to fly.

Orchelimum fidicinium Rehn and Hebard. August. Salt meadows.

Ceuthophilus uhleri Scudder. September, October, and, what is supposed to be the young, in early spring. *C. maculatus* was included in the 1889 list, but as no Staten Island specimens are now available, it had better be omitted, though it is a widely distributed species.

Miogryllus saussurei Scudder. June. It is to be found in the sandy parts of the island, but is not common. Its song is a slow *zee-ee-ee,* repeated at intervals of several seconds.

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List of Eighteen Titles of Old Maps on Which Staten Island is Shown[1]

By Thomas Letts

This list is compiled from the collection belonging to the American Geographical Society, 15 West 81st Street, New York.

1. Novi Belgii novaeque Angliae nec non partis Virginiae tabula multis in locis emendata a Nicolao Joannis Visschero (with framed view at right foot, "Nieuw Amsterdam op t'Eylant Manhattans:" references to public buildings A–K). (1650?)

2. Map of New Netherlands with a view of New Amsterdam (now New York) A. D. 1656, copied from A. Vander Donck's Map for D. T. Valentine's "Manual of the Corporation." 1652.

3. Belgii Novi Angliae nova et partis Virginiae novissima delineatio (Amstelodami: J. Janssonius. 1657?). (Native villages, groups of animals, canoe and two wind roses adorn the plate.)

4. Pascaert van Nieu Nederland Virginia en Nieu Engelant. Nieulycx uytgegeven t'Amsterdam By Hendick Dockner Boekverkooper en Graedbooghmaker, Inde Nieubrugsteegh In't Stuurmans gereetschap. (1664?)

5. Pascaerte van Nieu Nederlandt en de Engelsche Virginies van Cabo Cod tot Cabo Canrick (P. Goos?) (1669?)

6. Novi Belgii quod nunc Novi Yorck vocatur, Novaeque Angliae. Partis Virginiae Accuratissima et Novissima Delineatio. 't Amsterdam Jacob Meurs (1671). [Probably the earliest map using the title "New York."]

7. Pascaerte van Nieu Nederland Streckende van de Noordt Revier tot Hendrick Christian's Eylandt (Amsteldam, Pieter Goos, 1675?). (This map is accompanied by 2 pp. English text.)

8. A map of New England and New York, F. Lamb Sculp.

[1] Presented by title April 17, 1909.

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sold by Thos. Basset in Fleet Street, and Richard Chiswell in St. Paul's Church Yard. (London, 1676?)

9. Pas Kaart Vande Zee Kusten van Niew Nederland Anders Genaamt Niew York Tusschen Renselaars Hoek en de Staaten Hoek Door Vooght Geometra t'Amsterdam By Johannis van Keulen Boek en Zee Kaart verkoper aande Nieue brugh Inde Gekroonde Lootsman. (1681?)

10. A later issue of No. 1 altered to read "emendata per Nicolaum Visscher" and with very many additions to original. (1685?)

11. One of 10 inset plans on Herman Moll's Map of North America (1719?). This map shows soundings all around the island, but only the following names. "Stats Island: Wels, Oldtowne, Newtown: Dover and Billop." Perth Amboy is called "Perth City," and Brooklyn, "Brookland."

12. A special plan of "New York Harbour according to the latest Surveys" shows "Staten Isle" on a fairly large scale, but has only the words "Ferry (on the N.), New Town, Castleton, Old Town and another Ferry on S. see: Captn. Cyprian Southack's western sheet of Survey of Sea Coast from New York to Cape Breton. (1733?)

13. A draught of New York from the Hook to New York Town by Mark Tiddeman, printed for W. Mount and T. Page upon Tower Hill, London. (1742?) (This publishing locality remains even to the present day the center of distribution for all maps or charts for sea-going purposes.)

14. A Draught of New York and Perthamboy Harbour (sic). (This is one of 13 "Particular Draughts and Plans of the Principal Towns and Harbours belonging to the English, French, and Spaniards, in America and West Indies. Collected from the best authorities" by Eman. Bowen (1744?).

15. A Chart of the Mouth of Hudson's River, from Sandy Hook to New York (one of three inset plans on "The Provinces of New York and New Jersey: with part of Pensilvania, and the Province of Quebec. Drawn by Major Holland, . . . 1776."

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16. A sketch of the Operations of His Majesty's Fleet and Army under the Command of Vice Admiral, the Rt. Hble. Lord Viscount Howe and Genl. Sr. Wm. Howe, K.B. in 1776 (shows a fairly large map of S. I. with the positions of Lt. Genl. Dalrymple, with one Brigade of Hessians, a Detachment of the 14th Regt., some recruits and convalescents left for the security of Staten Island) with view of the Narrows.

J. F. W. Des Barres 1777.

17. Porti della Nueva Yorke Perthamboy (1777). (In this map the lettering of the title "New Jersey" *covers the full length of Staten Island.*)

18. Chart of the Entrance of Hudson's River, from Sandy Hook to New York, with the Banks, Depths of Water, Sailing marks, etc.: Scale 1 inch = 1 mile. Laurie & Wittle, 53 Fleet Street, London. 1794.

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The Species of Diplotaxis Liable to Occur on Staten Island[1]

By Charles W. Leng

Prof. H. C. Fall, of Pasadena, Cal., has recently published a Revision of Diplotaxis, in the preparation of which Staten Island specimens heretofore identified as *tristis* Kirby receive a new name, *atlantis*. His work will make the identification of our species easier, and permits of my making an abstract which covers the species liable to occur on our Island.

LARGE HAIRY SPECIES

1. Upper surface with fulvous pubescence, dense and moderately long on the head and prothorax, shorter towards apex of elytra, 10–12 mm. *sordida* Say.

Upper surface with grayish pubescence, sparser, erect but excessively short throughout, 11 mm. *rugosioides* Schaef.

LARGE GLABROUS SPECIES

2. Upper surface not hairy or pubescent.

Mentum feebly oblique behind, strongly declivous in front, the declivity more or less concave from side to side, its margin posteriorly arcuate and convex, but without raised line; pygidium with a somewhat vaguely impressed longitudinal median line, 10–12 mm. *atlantis* Fall.

Mentum horizontal and nearly flat posteriorly, more or less declivous in front, the declivity margined by a more or less arcuate raised line and a row of erect setæ.

Thoracic angles more or less impressed.

Prothorax more finely and evenly punctate; color black, without trace of metallic lustre; pygidium without impressed line, 12–14 mm. Can. to N. Y. *tristis* Kirby.

Prothorax more coarsely and quite irregularly punctate; elytra often with violaceous lustre; pygidium without impressed line, 12–14 mm. Mass. to Ga. *liberta* Germ.

[1] Presented at the joint meeting of the Section of Biology and the New York and Brooklyn Entomological Societies, May 8, 1909.

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SMALL SPECIES

3. Thoracic angles not impressed; much smaller.
Front with moderate or strong post-clypeal convexity. 3A.
Front with at most a very broad or feeble post-clypeal convexity. 3B.
3A. Basal margin of thorax not or scarcely impressed towards the hind angles, 8–9 mm. Ga., S. C., Fla. *frontalis* Lec.
Basal margin of thorax rather strongly impressed, especially towards the base, 8–9 mm. S. C., Ga., Fla., La., N. J.(?) *excavata* Lec.
3B. Clypeal margin more or less distinctly angulate, each side of the median sinuosity or truncation; upper tooth of front tibia distinctly ante-median in position, hind tarsi scarcely or but very little longer than the tibia, 6.5–8 mm. N. J. to Texas. *frondicola* Say.
Clypeal margin convex in outline from side to side, or with the middle truncate or subtruncate for a small distance.
Base of prothorax without marginal impressed line, 6.2–7.7 mm. Ga., Fla. and N. J. (Alice-Liebeck collection.) *bidentata* Lec.
Base of prothorax distinctly impressed along margin, 7–10 mm. N. Y. to Tex. *harperi* Blanch.

Of the above named species *sordida* and *atlantis* are included on account of actual Staten Island captures; *liberta, frondicola,* and *harperi* on account of actual captures nearby in N. J. and further because Staten Island is within the recorded range of those species—*rugosioides* recently described by Mr. Charles Schaeffer from N. H. is said by Prof. Fall to be the correct name for a specimen I obtained at South Pines, N. C., and it may therefore occur with us; *tristis* is a northern species and it is very doubtful if we shall ever find it here. The specimens heretofore called *tristis* are *atlantis; frontalis* is possibly the correct name for the *excavata* cited in Prof. J. B. Smith's New Jersey List. I have included both to call attention to their differences; *bidentata* is included on account of the Liebeck record in the New Jersey List but it is to be noted that outside of the New Jersey records all three, *frontalis, excavata,* and *bidentata,* are southern insects. Of the species cited in the New Jersey List—*sordida, liberta, frondicola* are confirmed—*atlantis* and *harperi* are added; while *tristis, excavata,* and *bidentata* are questioned. There remains one more, *truncatula* which is known only from Texas and Kansas and is so evidently an error that I have not included it at all.

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It should be stated that *Diplotaxis* has long been known as a difficult genus and errors in determination are not to be wondered at.

One source of wonder or surprise to me in working with Prof. Fall's paper has been that after the results Prof. Smith obtained by examining the genitalia of the allied *Lachnosterna* Fall should have apparently made little effort to confirm his classification by their help. He says on page 5:

"Secondary sexual characters are not entirely wanting, but with a few exceptions they are of such a nature that it is rarely possible to determine the sex of a single specimen, and even in a considerable series containing both sexes, they can rarely be separated with certainty. . . . The male genitalia are quite simple as far as examined, while in the female they are entirely membraneous and therefore useless for comparison. I have therefore not attempted systematic dissection, but leave this phase of the subject for the student who has the material and the time for its investigation."

For the Staten Islander who wishes to follow an interesting investigation the field is open and this paper will have fulfilled its object if it merely draws attention to a long neglected group. It is possible that *subcostata, densicollis, languida, rufa,* and even undescribed species may be added to our list as the result of such investigation; and it is desirable that an easy means of distinguishing sex be found.

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The Pine Snake at Lakehurst, New Jersey[1]

By William T. Davis

In presenting to the museum a medium sized pine snake *Pituophis melanoleucus* Daudin, collected at Lakehurst on May 13, 1909, I may take the occasion to record a large individual captured near the same place in the first week of July, 1908. The specimen was not seen by me, but on the authority of Mr. Curtis, owner of the Curtis Cranberry Bog, the serpent was the largest that he had ever observed. He found it near one of his berry houses and first placed it in one bag, but fearing that it would not be strong enough, he put another bag over that. The snake, bags and all, weighed 25 lbs. 1 oz. It was about nine or ten feet long. The usual length of fully grown individuals is about 6 to 8 feet.

The snakes captured by the inhabitants of Lakehurst are usually sent to Joseph Boger at Chatsworth, N. J., who is said to have sold several hundred dollars' worth in 1907. Large pine snakes usually bring about 15 cents a foot, and their skins can be used for a variety of purposes.

Mr. Charles W. Leng and I found a large pine snake west of the village of Manchester, now Lakehurst, in June, 1898, which we did not molest; and while near Cedar Grove, Ocean Co., N. J., in July, 1900, we came upon another. This was placed in a bag at the earnest solicitation of Mr. Cranmeer, who stated that he could get 50 cents for it. He was of the opinion that all of the pine snakes should be captured because he had known them to destroy many quail and rabbits.

A man who Mr. Howard H. Cleaves and I met in September, 1907, in the woods between Tuckerton and Munion Field, N. J., told us that he had been annoyed by the presence of a pine snake under the floor of his bunk in a cabin he occupied. If he turned

[1] Presented May 15, 1909.

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suddenly and jarred the floor, the snake would hiss loudly after the manner of the species of *Pituophis*. He finally succeeded in catching the snake outside of its secure retreat, and killed it promptly.

Pine snakes are said to be generally cross, but the present individual as well as the two others that I have picked up, have not been more so than the average garter snake. They certainly should not be destroyed as is generally the custom, for between forest fires and the general habit of killing all snakes, they are fast becoming scarce. While they eat eggs, birds, and young rabbits, they also destroy mice as well. The general policy of hands off and non-interference with things natural, is a good one to pursue.

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Literature Relating to Staten Island

Photographing Young Crows[1]

This is an illustrated description of a nest of young crows found on Staten Island. The locality is not given. One figure shows the young birds resting quietly in the nest, the other shows them with their mouths open, clamoring for food.

The author was evidently an enthusiastic photographer, but apparently of somewhat limited experience in regard to the nesting habits of crows, as indicated by his concluding remarks that "the crow is as wise a bird as flies, and knows how to build its nest out of reach of mankind."

Those who have found Staten Island crows' nests in apple, cedar, and other easily accessible trees, will be inclined to smile at such a broad generalization based upon a single isolated instance.

A. H.

Staten Island and Staten Islanders[2]

This is a pamphlet of 100 pages, including twenty-four of advertisements, 4 plates and 4 figures in the text. The "fore word" states that it is an attempt "to tell those things which a stranger might most desire to know about New York's smallest borough."

The following main headings indicate the attempted scope of the work: Geographic Description, Historic Landmarks, Transportation Facilities, The Churches of All Denominations, The Charitable Institutions, The Schools, Hospitals, Amusements,

[1] By Clarence T. Busteed. *Country Life in America*, 15: 80 and 82, *two figs. in text.* November, 1908.

[2] Staten Island | and | Staten Islanders | Compiled by | The Richmond Borough Association | of Women Teachers | Cover Designed by Josephine Thorne | Editor, Margaret Louise Lynd | Publication Committee | Alice J. Bloxham, *et al.* | The Grafton Press | New York | 1909.

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Theaters, Women's Clubs, Associations of General Interest, A Few Staten Islanders.

A number of Staten Islanders are credited with having assisted in the preparation of the work, but apparently the authors did not have opportunity to read proof, as typographical and other errors are so numerous as to seriously mar the value of the text. The geographical description is by Dr. Arthur Hollick; the notes on historic landmarks, by Mary Wolcott Green, including pictures of a number of our old houses, were selected from material furnished by our local historian, Ira K. Morris. The chapter on amusements will probably cause most readers to smile, as it consists exclusively of an enthusiastic description of South and Midland Beach, with their varied attractions of scenic railways, punching machines, tintype tents, dance halls, etc. Apparently theaters are not regarded as an ordinary medium of amusement and are given a separate chapter.

The women's clubs are the only ones enumerated; which might lead the stranger to imagine that our island was an Adamless Eden. The average person would probably be more interested to know about our several tennis and golf clubs and the Staten Island Club and Richmond County Country Club and other similar organizations.

The only two "Associations of General Interest" honored by mention are the Staten Island Association of Arts and Sciences and the Richmond County Agricultural Society. The former receives a somewhat disproportionate amount of space as compared with the latter.

Under the heading "A Few Staten Islanders" the following only are listed, with brief biographical notes: Edwin Markham, William Winter, Florence Morse Kingsley, George Daulton, Agnes McClelland Daulton, Rev. George A. Jamieson, Etta Anthony Baker, Anna Shaw Curtis, Arthur Hollick, Howard R. Bayne, William T. Davis, Ira K. Morris and Sidney Fuller Rawson. This selection is said to be one of elimination and the result to be "a brief mention of the best known writers, of the

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three men who know Staten Island as none others know it, one politician who is a politician in the best sense of the term, and two public spirited citizens."

The general impression conveyed by the book is that most of the chapters are so incomplete as to give an erroneous impression of our resources under the several headings. In a second edition, which is apparently contemplated, these should be either omitted entirely or else made reasonably complete.

A. H.

STUDIES OF CRETACEOUS CONIFEROUS REMAINS FROM KREISCHERVILLE, NEW YORK[1]

In the preface to this Memoir the statement is made that it "is designed to present the results derived from critical studies of coniferous remains from certain of the Cretaceous deposits at Kreischerville, Staten Island, New York, especially from two exposures, locally known as the Androvette pit and the Drummond pit. . . ."

Although it is a joint contribution by two authors the individual work of each is clearly specified. The senior author, Dr. Hollick, is stated to be responsible for identifications based upon external characters of the larger specimens and for the figures illustrating them, and the junior author, Dr. Jeffrey, for the preparation and microscopical examination of the smaller specimens and lignites, and determinations based upon internal structure as shown in the photomicrographs of sections.

The introduction gives a history and complete bibliography of previous investigations of the paleobotany of the vicinity, beginning with the brief reference to the lignite by Lewis C. Beck, in the First Annual Report of the New York State Geological Survey, in 1837, and terminating with a list of recent papers by the authors, preliminary to the one now before us, all of them

[1] By Arthur Hollick, Ph.D., New York Botanical Garden, and Edward Charles Jeffrey, Ph.D., Harvard University. Mem. New York Bot. Gard. 3: Roy. 8vo, pp. 138, *pls.* 29. May 20, 1909.

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either published or reviewed in our PROCEEDINGS during the past five years.

The authors appear to have unearthed some very unique material, which is unusually well preserved and well adapted for critical study, as evidenced by the illustrations of internal structure and, if the interpretation of the facts are correct, some of the results attained are somewhat startling. For example, certain leafy twigs, identified from their external characters as *Frenelopsis gracilis* Newb., *Widdringtonites Reichii* (Ettingsh.) Heer, *Brachyphyllum macrocarpum* Newb., and *Sequoia Reichenbachi* (Gein.) Heer, were sectioned and determined to belong in the Araucarineae, instead of in the Sequoiineae and Cupressineae. The sections of these twigs shown in the illustrations are undoubtedly araucarineous in their affinities; but the whole importance of this fact is dependent upon whether they were correctly identified from the external characters in the first instance.

Among the many new genera described it is of interest to note that the name of the owner of the clay pits, and that of the locality, is recognized in the name *Androvettia statenensis,* while our fellow member, Mr. William T. Davis, is remembered in the new species *Strobilites Davisii,* based upon a well-preserved cone, collected by Mr. Davis.

Our museum material was freely utilized in the preparation of the memoir, and most of the figured specimens showing external characters are in our collection.

It is the most exhaustive and best illustrated contribution to our local science that has yet been issued from any source, and the authors are to be complimented on the thoroughness with which they have carried out their investigations.

C. L. P.

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Records of Meetings

Regular Meeting, March 20, 1909

The meeting was held in room 309, Borough Hall, St. George.

First Vice-President William T. Davis in the chair.

About twenty persons were present.

The minutes of the meeting of February 20, 1909, were read and approved.

Scientific Program

Mr. Charles L. Pollard exhibited a series of specimens and gave an account of the silk moths of North America.

Dr. Arthur Hollick exhibited herbarium specimens and read "Notes on Recently Introduced Grasses and Sedges." (Printed in full in this issue, p. 189.)

Mr. James Chapin exhibited specimens and read "Local Notes on Migratory Birds." (Printed in full in this issue, p. 185.)

Mr. William T. Davis exhibited a collection of shells of soft clams, edible mussels, and other molluscs, picked up in woods and along fence lines near the south shore of the island, where they were apparently carried and dropped by crows after the contents had been eaten. A relatively large amount of such material is distributed in this manner.

The meeting then adjourned.

Regular Meeting, April 17, 1909

The meeting was held in room 309, Borough Hall, St. George.

The meeting was called to order by First Vice-President William T. Davis.

About thirty-four persons were present.

The minutes of the meeting of March 20, 1909, were read and approved

President Howard R. Bayne arrived and took the chair.

On motion the President was authorized to appoint a committee on nominations to suggest candidates for trustees to be voted for at the annual meeting of the Association.

Scientific Program

Dr. Arthur Hollick exhibited a section of a maple tree limb infected with a fungus, and read a paper on "A Maple Tree Fungus." (Printed in full in this issue, p. 190.)

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Mr. William T. Davis exhibited specimens and read notes on "Additions to the List of Staten Island Orthoptera." (Printed in full in this issue, p. 193.)

Mr. Davis also exhibited a living larval eel, and gave an account of recent discoveries in regard to the breeding habits of eels.

Mr. Davis, on behalf of Mr. Thomas Letts, presented for publication a "List of Eighteen Titles of Old Maps on which Staten Island is Shown," compiled from the collection belonging to the American Geographical Society. (Printed in full in this issue, p. 195.)

Mr. James Chapin presented local notes on the nesting of the red-shouldered hawk, *Buteo lineatus* (Gmel.), fish hawk, *Pandion haliætus carolinensis* (Gmel.), and barred owl, *Syrnium nebulosum* (Forst.), and on the occurrence of the saw-whet owl, *Nyctala acadica* (Gmel.), from observations made during the present spring.

Mr. Alanson Skinner presented notes on Staten Island salamanders and stated that recent extensive burning of the woodlands was causing them to become more and more scarce each year.

Mr. Chapin stated that the note of the swamp tree-toad, *Chorophilus triseriatus*, had been heard this spring near Annadale.

Mr. Charles L. Pollard called attention to the collection of Staten Island birds' eggs recently arranged and placed on exhibition. Also a collection of lepidoptera recently received in exchange from Mr. George P. Engelhardt, of the Brooklyn Institute Children's Museum.

The meeting then adjourned.

ANNUAL MEETING, MAY 15, 1909

The fourth annual meeting of the Association was held in room 309, Borough Hall, St. George.

President Howard R. Bayne in the chair.

About forty-five persons were present.

The minutes of the meeting of April 17, 1909, were read and approved.

The annual report of the Board of Trustees, including reports of the Executive, Auditing, and Publication Committees, and of the Curator-in-chief, were read and ordered placed on file.

The annual report of the Treasurer was read and ordered placed on file.

The annual report of the Secretary was read and ordered placed on file.

The President stated that the next order of business was the election of four trustees, to serve for a term of three years, to fill the vacancies caused by the expiration of the terms of Howard R. Bayne, Arthur Hollick, William T. Davis and Charles A. Ingalls, and called for a report from the committee on nominations.

The committee submitted the following report:

The undersigned committee begs leave to recommend for election to the Board of Trustees of the Staten Island Association of Arts and Sciences the following named gentlemen, to succeed themselves: Hon. Howard

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R. Bayne, Dr. Arthur Hollick, Mr. William T. Davis, Mr. Charles A. Ingalls.

Respectfully submitted,

D. L. BARDWELL,
WM. MACDONALD,
JOHN RADER,
Nominating Committee.

The President asked if there were any other nominations and no others being made it was *voted,* that nominations be closed and that the secretary be instructed to cast one affirmative ballot for the nominees submitted by the committee.

The secretary cast the ballot as instructed and the President declared Howard R. Bayne, Arthur Hollick, William T. Davis and Charles A. Ingalls elected trustees of the Association for the ensuing three years.

Dr. Philip Dowell, recorder of the Section of Biology, presented a report on the organization of the section and an abstract of its proceedings for the year.

Miss Edith M. Pollard, recorder of the Section of Art, presented a report on the organization of the section and an abstract of its proceedings and activities from the date of its organization.

The President then delivered his annual address.

SCIENTIFIC PROGRAM

Mr. William T. Davis exhibited a living pine snake and read a paper on "The Pine Snake at Lakehurst, New Jersey." (Printed in full in this issue, p. 201.)

Mr. Charles P. Benedict exhibited a living milk snake, captured near the Manor Road, West New Brighton.

Mr. Alanson Skinner exhibited photographs of a woodcock, *Philohela minor* (Gmel.), sitting on its nest, taken at Woodrow on May 11. Also photographs taken subsequently by Mr. Howard H. Cleaves.

Mr. Skinner also showed a photograph of forty-two box tortoises, *Tranene carolina,* the result of one day's collecting on Staten Island. Mr. Skinner stated that for some time past he had been numbering each one captured by cutting a serial number in the under shell and then releasing the captive. A record of the date of each number and the place of capture was kept, in order that each individual tortoise could be recognized if captured again at any time or in any locality. One hundred and twenty had been numbered to date.

The meeting then adjourned.

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Annual Reports

ANNUAL REPORT OF THE BOARD OF TRUSTEES

May 15, 1909

The Board of Trustees, with the cordial coöperation and assistance of the several standing committees and the officers of the Association, has conducted the routine business of the Association and attended to all matters requiring attention and executive action.

Ten meetings were held as follows: The annual meeting on May 23, 1908; stated meetings on October 3, 1908, January 2 and April 3, 1909; special meetings on June 9, July 21, November 16 and December 15, 1908, January 23 and March 5, 1909.

Many new and some unexpected conditions developed during the year which required careful consideration and more or less experimenting before definite action could be safely taken.

The relations between the Association and the city are now on a thoroughly satisfactory basis. The Board of Estimate and Apportionment approved of our application for an appropriation of $4,000 for the maintenance and equipment of the museum and library, and this amount was included in the City Budget for 1909 and has been available since January 1 for the payment of adequate salaries for a curator-in-chief and museum assistant and for the purchase of all necessary supplies for the proper care and maintenance of the collections and library. We are now practically on an equality with our sister institutions in the other boroughs, so far as recognition by the city is concerned.

The museum was formally opened to the public on May 23, 1908, with appropriate exercises.

Since that date various experiments have been tried in regard to the hours of opening. At first it was necessary to close the museum to the public on all except three days in the week, in order that the collections might be properly installed and arranged for display. The museum was open to the public on Tuesdays, Thursdays and Saturdays, from 10 A. M. to 5 P. M. It was next opened on Monday evenings also, from 7:30 to 10 o'clock, but the attendance did not warrant the trouble, and this experiment was abandoned.

After a large part of the preliminary work of arranging and cataloging had been accomplished the open hours were changed to Tuesdays, Wednesdays, Thursdays and Fridays, from 1 to 5 P. M. and Saturdays from 10 A. M. to 5 P. M.

The experiment was also tried during the month of April, of keeping open one hour later in the afternoon, until 6 o'clock, but this was abandoned by reason of lack of attendance.

The present arrangement of keeping open on the afternoons of Tuesdays, Wednesdays, Thursdays and Fridays and all day Saturdays, and reserving the remainder of the time for museum work, is probably as satisfactory an adjustment as can be made under existing conditions.

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The Board of Trustees, however, adopted the following expression of policy in regard to the matter, at the stated meeting of the Board held on April 3, 1909:

"The terms and conditions under which the museum and library shall be open to the public must necessarily be determined in accordance with whatever circumstances and conditions may obtain from time to time; but in no event shall any entrance fee be charged at any time, and,

"It is further declared to be the earnest desire of the Board of Trustees that the museum and library may be open to the public every day in the year, Sundays and legal holidays included, except when the necessity may arise for temporarily closing it for the purpose of cleaning or making repairs or for the installation of exhibits, and,

"It is hereby declared to be the intention of the Board of Trustees to arrange such a schedule of opening, and to carry the same into effect, whenever adequate facilities, and means applicable to the purpose, shall have been provided by the city."

The room was open on each of the evenings when the Borough President held his monthly reception in the Borough Hall.

Members of the Association are not restricted to the hours of public opening but may freely visit and make use of the museum and library at all reasonable hours. The attendance on the part of the public has been exceedingly gratifying, as shown in the appended report of the curator-in-chief.

The board also approved of a series of Saturday afternoon talks to school children on various natural history subjects by the museum staff and several of the members who volunteered for the experiment, and the results were exceedingly encouraging. These were given during December, January and March and the total attendance was 405, or an average of 40.5 on each afternoon. Details are given in the appended report of the curator-in-chief. The exhibits at the branch public libraries at Stapleton and St. George were continued under the auspices of the curator-in-chief and arts and antiquities committee of the Association with marked success.

The museum cases were rearranged under the direction of the museum and library committee, so as to provide additional floor space at the north end of the room and this has enabled the Association to hold its meetings in the museum instead of in the reading room of the public library at St. George. This change has met with the approval, apparently, of all concerned, and has added materially to the pleasure and interest in the meetings.

Three sections were formed with the approval of the trustees: Section of Biology approved on June 9, 1908; Section of Art on March 5, 1909, and Section of Literature within the past three weeks. The first two have organized and have done excellent work, as well as having been a source of enjoyment to the members.

The new monthly publication, the Museum Bulletin, the first number of which was issued last August, has served to acquaint the members with

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the musuem activities and also to inform the members of meetings and matters of general interest.

The Board has elected one member to patronship, Mr. Alanson Skinner, in recognition of his valuable gift of Indian relics to the museum. The Board has also elected two corresponding members, Jonathan Dwight, Jr., A.B., A.M., of New York, physician and ornithologist, and William Brewster, A.B., A.M., of Cambridge, Mass., ornithologist and manager of the Brewster Museum.

During the year the Board also elected the following to active membership: John Q. Adams, Mrs. John Q. Adams, Bradford B. Babbit, Mrs. Bradford B. Babbit, Mrs. Bertha K. Baker, Mrs. Darwin L. Bardwell, Joseph J. Barth, Miss Mary A. M. Bayne, Mrs. George R. Boynton, Mrs. Edward C. Bridgman, Charles S. Burch, Mrs. Charles S. Burch, Miss S. Gertrude Clark, Miss Elizabeth B. Curtis, John J. Driscoll, Benjamin F. Funk, Abel J. Grout, William M. Halloran, Frank Hankinson, James Harrigan, Miss Zillah Heidenheim, Thomas O. Horton, Mrs. Charles Humphrey, Mrs. Charles W. Hunt, John P. Ilsley, Mrs. John P. Ilsley, Mrs. Charles H. Ingalls, Mrs. Mary L. Janeway, Henry C. Johnston, Mrs. Marcel Kahle, Emil F. Kipper, Miss Lucy J. Kipper, George C. Lenington, Louis W. Levy, Nathan J. Lowe, John Macrea, James C. Marriot, James McBrien, Frank G. McCreery, Miss Mary B. Millspaugh, Leonard McC. L. Mitchill, James Nolan, Miss Agnes L. Pollard, Miss Edith M. Pollard, Michael J. Reardon, Edward J. Russell, Charles Schaefer, Mrs. Emily Sears, William L. Sexton, Alexander D. Shaw, Charles M. Shipman, Arthur Sloan, John W. Tilley, Henry E. Wallace, Mrs. Henry E. Wallace, Mrs. Park J. White, Mrs. William G. Willcox, Miss Annie F. Wood, Miss Elizabeth M. Woodruff.

Respectfully submitted for the Board,
ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE

The committee held four meetings and transacted all business referred to it by the Board for investigation or determination.

Other matters requiring attention were also considered and acted on and subsequently reported to and approved by the Board.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE AUDITING COMMITTEE

The committee examined the books and accounts and audited the annual and quarterly reports of the treasurer, dated respectively May 16, 1908, October 3, 1908, January 2, 1909, and April 3, 1909. The same were found to be correct in all particulars, and were so certified by the committee.

GEORGE S. HUMPHREY, *Chairman,*
STAFFORD C. EDWARDS.

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ANNUAL REPORT OF THE PUBLICATION COMMITTEE

The committee, in coöperation with the curator-in-chief, has issued the Museum Bulletin each month, including No. 1, August, 1908–No. 10, May, 1909.

Part 1, Volume II, of the PROCEEDINGS (October, 1907–January, 1908, inclusive) was issued October 17, 1908.

Copy for Part II (February, 1908–May, 1909, inclusive) has been prepared and is ready for publication.

Copy for Part III is in hand and can be prepared for publication at any time, and Part IV, to include the records of the present annual meeting, can be ready during the coming summer.

The issue of these parts during the autumn would again bring the publication of our PROCEEDINGS up to date, after the recent unavoidable delay.

PHILIP DOWELL, *Chairman,*
WILLIAM T. DAVIS,
ARTHUR HOLLICK.

ANNUAL REPORT OF THE SECRETARY

Number of members on roll at date of last annual report:		
Active	298	
Life	2	
Honorary	2	
Corresponding	2	
Patrons	4	
		308
Since elected:		
Active	64	
Corresponding	2	
Patron	1	
		67
		375
Resigned	17	
Dropped from the roll	8	
		25
On roll at date		350

This now includes 337 active, 4 corresponding, 2 life and 2 honorary members and 5 patrons.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE TREASURER

Income

Balance from last year		$ 189.57
Since received:		
Dues	$ 802.50	
Subscriptions to Myers purchase fund	125.00	
Subscriptions to special maintenance fund	15.00	

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Subscriptions to PROCEEDINGS	30.35	
Lecture and concert committee	435.63	
Interest on life membership fund	4.20	
Loans	1,050.00	
City appropriation	875.72	$3,338.40
Total		$3,527.97

Disbursements

Printing PROCEEDINGS	$ 96.73	
Miscellaneous printing and stationery	61.24	
Sundry expenses	66.04	
Subscriptions to periodicals	4.00	
Administration expenses	44.73	
Purchase of Myers collection	158.00	
Items charged to special maintenance	118.10	
Items charged to acct. of lecture and concert com.	518.51	
Note of March 9, 1909	250.00	
Interest on notes to May 1, 1909	22.17	
Salaries to Dec. 31, 1908 (paid from Ass'n funds)	841.64	
Salaries and supplies (paid from city approp.)	875.72	
Salaries and supplies awaiting reimbursement from city appropriation	316.04	
Total		$3,372.92
Balance in hand		$ 155.05

C. A. INGALLS,
Treasurer.

ANNUAL REPORT OF CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,
STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: I have the honor to submit herewith my second annual report as Curator-in-chief of the Museum, covering the fiscal year of the Association from May 16, 1908, to May 15, 1909.

The Museum

The Museum was formally opened to the public with appropriate exercises on May 25, 1908. Owing to the short period of preparation and the lack of trained assistance, many of the exhibits were only temporarily installed; but with the material already on hand and that which was loaned for the occasion, it was possible to make a creditable display. The cases were apportioned as follows:

	Table Cases	Uprights
Geology	3	
Mineralogy	2	
Ornithology	1½	3
Invertebrate zoölogy	4½	

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Archeology	4	
Anthropology	1	3
Relics and antiquities	2	
Art objects		3

With the receipt of new accessions during the year it has been found advisable to change this assignment somewhat, giving greater prominence to geology and less to invertebrate zoölogy. Our constant effort has been to keep in touch with our visitors and profit by their comments and suggestions whenever practicable. The year's experience has demonstrated that since children form the larger part of our constituency, it is necessary to plan the exhibits to serve educational needs. For this reason the collection of birds and birds' eggs, butterflies, and Indian implements have been especially popular, and have been examined with interest by many of the older visitors. At the present time the cases are arranged as follows:

	Table Cases	Uprights
Geology—Drift fossils of Staten Island	1	
Geology—Stratigraphic	3	
Geology—Structural	1	
Geology—Minerals	2	
Mounted birds of Staten Island		2
Birds' eggs and nests	1½	
Marine life	½	
Insect architecture		1
Indian archeology of Staten Island	4	
Iroquois Indian implements, etc.		3
Pueblo Indian archeology	2	
Shells	1	
Staten Island antiquities	2	
Art objects		2

There are also six wall cases of butterflies and various maps, photographs, etc. Two additional cases of art objects are displayed at the St. George library.

On July 3, 1908, by authority of the Board, an agreement was effected with Mr. Arthur E. Bostwick, chairman of the Circulating Department of the New York Public Library, whereby the Museum undertook to provide exhibits for the cases in the reading room of the St. George branch, in return for the use of the room by the Association for its monthly meetings. I assigned these cases to the Committee on Art, which has kept them well filled with a highly interesting and valuable exhibit of ceramics, old costumes, laces, etc. Although the Association is no longer meeting in the library, it seems desirable to continue the use of these cases in view of the additional space thus afforded for display. I have also placed an exhibit from time to time in the Stapleton library at the request of the librarian in charge.

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Labels

When the Museum was opened all the specimens were provided with typewritten labels. These are being replaced as rapidly as possible by permanent labels, printed on the Museum press. The work of labeling progresses slowly because of the care necessary in obtaining accurate information, often involving considerable research. It is hoped that all permanent exhibits may be completely labeled by the close of the calendar year

Accessories

The supports and other accessories used in mounting specimens for exhibition were for the most part purchased with the appropriation made by the city last year. For the geological specimens white pasteboard trays bearing a shoulder for the label are used; these are also employed for the general collection of minerals, but the quartzes and agates are displayed on square wooden blocks painted dead black. The birds are mounted on perches of natural twigs; birds' nests are placed in the wire supports designed by the late Major Bendire, of the National Museum. The birds' eggs are laid upon a bed of sawdust dyed black, the various groups separated by pasteboard strips. Archeological specimens are provided with wooden blocks painted cream yellow, the case having a backing of similar color. In most of the cases white, green or brown burlap is used for the backing, giving a very satisfactory and artistic effect.

Accessions

The total number of accessions is 98, representing 3,082 specimens, apportioned among the different subjects as shown in the following table:

	Accessions	Specimens
Zoölogy	33	1,306
Botany	10	924
Geology	22	196
Anthropology	1	250
Arts and antiquities	8	43
Books, photographs and maps	23	285
Miscellaneous	1	78
	98	3,082
By gift		1,518
By exchange		964
By purchase		± 600
		3,082

Of special importance was the collection of reptiles, batrachians, and miscellaneous objects purchased from Mr. Charles Myers, of New York City, upon the recommendation of the curator-in-chief, a fund for this purpose having been subscribed by about thirty members of the Association. The gift of Mr. Alanson Skinner's excellent collection of objects illustrating

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the life and customs of the Iroquois Indians in central New York was also of great value to use. Other important accessions were the gift of 75 exotic butterflies by Mr. George P. Engelhardt, of the Children's Museum in Brooklyn; 47 government documents from the Superintendent of Documents in Washington; 797 herbarium specimens by exchange with the U. S. National Museum; various specimens of insects from Mr. William T. Davis and Mr. George Franck; and a large number of geological specimens collected especially for the Museum by Dr. Hollick. At various times I have made local collections intended to fill up gaps in our study series, and I have also purchased some rare and interesting insects which are now deposited in the Museum, and which will be given to it ultimately.

Museum Catalogue

A typewritten card catalogue of all the specimens in the Museum was commenced in July and considerable progress has been made. Different colors are used to distinguish the various subjects, as indicated in the following table, which also gives the total number of specimens thus far catalogued in each subject.

	Color	No. of cards written	No of specimens represented
Anthropology and archeology	buff	1,380	2,107 +
Botany	green		
Arts and antiquities	yellow		
Zoölogy	salmon	1,634	5,250 +
Geology, mineralogy and paleontology	blue	921	1,423 +
		3,935	8,780 +

The main catalogue is arranged numerically, and is thus a chronological record. It will be supplemented by a species catalogue, in which all the specimens of a given species will be grouped together on one card, thus showing the actual contents of any department.

Library

The library has been enriched by the gift of a number of volumes from various sources, and continues to receive the valuable exchanges which have been its most prominent feature. The current list of exchanges is appended to this report. The books are being classified on the Dewey system, 2,018 having been up to the present time classified and accessioned. A subject catalogue will be prepared after this arrangement is complete and the necessary binding has been done.

The Museum Staff

Mr. Harold Nelson served as Museum Assistant until the end of May, 1908. On June 9 Miss Agnes L. Pollard, of the Smithsonian Institution, was appointed Museum Assistant by the Board, and entered upon her

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duties July 6. She has been occupied throughout the year chiefly in the preparation of the museum and library catalogues, in clerical and secretarial work, and in attending to visitors and supplying information. My own time has been largely occupied with administrative details, with correspondence and reports and with attention to visitors. This interferes considerably with the important work of preparing, mounting and labeling specimens, which ought to proceed with little interruption in order to secure the best results. The Museum cannot, therefore, be expected to show the same degree of progress that would be possible with an additional scientific assistant. For the same reason I have hitherto undertaken no research work, but during the coming summer I expect to carry on some studies in heredity of hybrid characters, using for this purpose a number of species of our American silk moths, which are easily bred from the egg. The results of this study will be offered to the Association for publication and the specimens, which are my own property, will be presented to the Museum and used for exchanges with other institutions.

With the exception of the Museum Assistant, the staff remains the same as last year: Curator-in-chief, Mr. Charles Louis Pollard; Museum Assistant, Miss Agnes L. Pollard; Honorary Curator of Zoölogy, Mr. William T. Davis; Honorary Assistant in Ornithology, Mr. James Chapin; Honorary Curator of Botany, Dr. Philip Dowell; Honorary Curator of Geology and Paleontology, Dr. Arthur Hollick; Honorary Assistant in Anthropology, Mr. Alanson Skinner.

Museum Activities

During the year three courses of Saturday afternoon talks for the benefit of children in the medium and upper grades of the public schools were given in the Museum. The speakers were all members of the Museum staff, and the lectures were in general well attended.

Date	Speaker	Number in attendance	
December 5, 1908	Miss Agnes L. Pollard	96	
December 12, 1908	Miss Agnes L. Pollard	71	
December 19, 1908	Miss Agnes L. Pollard	46	
December 26, 1908	Miss Agnes L. Pollard	20	
			233
February 13, 1909	Mr. James Chapin	30	
February 20, 1909	Miss Agnes L. Pollard	40	
February 27, 1909	Mr. Charles Louis Pollard	36	
			106
March 20, 1909	Dr. Arthur Hollick	21	
March 27, 1909	Mr. Charles Louis Pollard	28	
April 3, 1909	Mr. Alanson Skinner	17	
			66
			405

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The Museum Bulletin

Early in July the Board approved my recommendation that a new publication be issued, to be known as the Museum Bulletin, and to contain the official notices of the Association, together with such items of information about the Museum as might be calculated to interest the members. I was authorized to act as editor, under the supervision of the Committee of Publications. The first number was issued in August, and the Bulletin has been published monthly since that time. At first it was printed on the Museum press, but after entry at the New Brighton post office as second class matter it was deemed advisable to have the printing done professionally. The Bulletin is distributed free of charge to members of the Association and to our exchange list.

The Needs of the Museum

Apart from the constant necessity for larger quarters and an additional member of the Museum staff, there are certain important requirements in our general work. The numerous complete but unbound volumes in the library are suffering from being handled and from exposure to dirt. Of these there is an accumulation of at least seven years awaiting binding. The files of old Staten Island newspapers, many of them of great value, are rapidly disintegrating for lack of proper protection in strong board covers, and in their present condition they are quite inaccessible.

In the Museum there are several departments in which a relatively small amount of money could be invested to good advantage in the purchase of material. For example, the Chapin collection of Staten Island birds lacks only the aquatic birds and one or two others to be an absolutely complete collection of our avifauna. It would be eminently desirable if a small museum fund could be raised for these purposes, expendible by the Board upon the recommendation of the Curator-in-chief, with the approval of the Museum Committee. There is no way in which members and friends of the Association could evince a more practical interest in the Museum or accomplish more real good to the general public than by contributing to such a fund. Without in any way depreciating the value of the gifts we have received, I venture to point out here that in many cases these gifts are, for various reasons, unsuitable for exhibition purposes. Frequently they are of value for study, but are of little use to the public. Sometimes they can only be relegated to storage. We have now reached the point where each department of the Museum has definite needs, which can be supplied by intelligent purchases only, or by special collecting excursions, often out of the question with our small staff.

Appended are statistics relating to matters discussed in this report.

Respectfully submitted,

CHARLES LOUIS POLLARD,
Curator-in-chief.

May 15, 1909.

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EXPENDITURES ON ACCOUNT OF BOND ISSUE AUTHORIZED BY THE CITY IN SEPTEMBER, 1907

Museum Furniture

The Siegel-Cooper Co., showcases	$1,798.48	
John Wanamaker, tables, chairs, desks and miscellaneous fittings	211.45	
John Wanamaker, folding chairs	36.00	
The Macey Co., bookcases	50.00	
The Globe-Wernicke Co., bookshelves	47.50	
Koller and Smith, filing and card cabinets, equipments.	191.65	
Koller and Smith, storage case for specimens	84.00	
Library Bureau, book truck and library supplies	49.50	
Underwood Typewriter Co., typrewriter and desk	112.00	
		$2,580.58

Apparatus, etc.

Kny-Scheerer Co., glass jars and other apparatus	329.51	
American Entomological Co., insect cabinets, Riker mounts, apparatus	222.95	
F. Blake Webster Co., taxidermists' supplies	11.15	
Eimer and Amend, chemicals and preservatives	118.11	
Albert Venino, modeling wax	35.16	
Devoe and Reynolds, paints	13.75	
Whitall-Tatum Co., corks and bottles	10.05	
		$ 740.68

Stationery and Mounts

J. Spencer Turner Co., burlap backing	70.88	
E. G. Soltman, compo board	50.80	
Richard C. Loesch, cardboard	64.50	
Jones and Skinner, manila paper	29.25	
Ward's Natural Science Establishment, pasteboard trays	57.00	
D. S. Hillyer, pamphlet covers	40.00	
		$ 312.43

Miscellaneous

Barnhart Type Foundry Co., printing outfit	138.71	
Barnhart Type Foundry Co., type, supplementary	44.14	
Montgomery and Co., tools	62.80	
C. G. Norman, carpentry work	20.00	
Carrére and Hastings, architect's fee	89.92	
		$ 355.57
		$3,989.26

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ATTENDANCE

Month	Number of days	Number of visitors	Average per day
May (26), 1908	2	66	33
June, 1908	13	145	11 2/13
July, 1908	12	92	7 2/3
August, 1908	13	166	12 10/13
September, 1908	13	182	14
October, 1908	14	273	19 1/2
November, 1908	10	318	31 4/5
December, 1908	14	410	29 2/7
January, 1909	13	367	28 3/13
February, 1909	19	489	25 14/19
March, 1909	22	550	25
April, 1909	22	401	18 5/18
May (15), 1909	11	138	12 5/11
	178	3,597	

ATTENDANCE ON SPECIAL OCCASIONS

	Number of visitors
Opening day, May 23, 1908	100
Evenings (October, November and December, 1908)	11
Borough President's four reception evenings	127
	238

The Museum has also been open at the meetings of the Association held March 20 and April 17, and at the joint meeting of the Section of Biology with the Brooklyn and New York Entomological Societies on May 8. The attendance at the Saturday afternoon talks is separately tabulated.

EXCHANGES

Academy of Science of St. Louis	Transactions
Academy of Natural Science of Philadelphia	Proceedings
American Academy of Arts and Sciences	Proceedings
Augustana College and Theological Seminary	Publications
Boston Society of Natural History	Proceedings
Bronx Society of Arts and Sciences	Transactions
California Academy of Sciences	Proceedings
Canadian Entomologist	
Central Museum of the Brooklyn Institute	Museum News, Science Bulletin, Cold Spring Harbor Monograph
Chicago Academy of Sciences	Special publications
Cincinnati Society of Natural History	Journal
Colorado College	Colorado College Studies

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Colorado Scientific Society	Proceedings
Columbia University	Contributions from Depts. of Geology and Botany
Davenport Academy of Science	Proceedings
Elisha Mitchell Scientific Society	Journal
Field Museum of Natural History	Zoölogical, Botanical, Geological, and Report Series
Geological Institution, University of Upsala	Bulletin
Geological Survey of Canada	Annual Reports
Geological Survey of Ohio	Reports and Bulletin
Historical and Scientific Society of Manitoba	Transactions
Instituto Geologica de Mexico	Boletin, Parergones
Kaiserlichen Leopoldinisch-Carolinschen Akademie	Abhandlungen, Leopoldina
Kansas Academy of Science	Transactions
Lloyd Library	Mycological Notes, Bulletin
McGill University	Papers
Missouri Botanical Garden	Annual Reports
Museo Nacional de Costa Rica	Paginas Ilustradas
Museo Nacional de Montevideo	Anales
Natural History Society of Glasgow	Transactions
Natural History Society of New Brunswick	Bulletin
New York Academy of Sciences	Annals
New York Botanical Garden	Bulletin
New York State Library	State Museum Reports
Nova Scotia Institute of Science	Proceedings
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Proceedings of the Section of Biology

MARCH 13, 1909

The meeting was held in the museum.

Messrs. G. P. Engelhardt and C. E. Olsen were present as guests.

The chairman submitted a draft of bylaws, which were read and adopted, as follows:

BYLAWS, SECTION OF BIOLOGY

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

I

The officers of the Section shall be a Chairman and a Recorder. They shall be elected annually, by ballot.

II

The duties of the Chairman and the Recorder shall be such as usually pertain to those officers. In addition to keeping a record of the Section, the Recorder shall have charge of all moneys received or expended by the Section and shall pay all bills, subject to the instruction of the Sectional Committee.

III

The officers, together with the Curator-in-chief of the Museum, ex-officio, shall constitute the Sectional Committee, which shall be empowered to transact the executive business of the Section.

IV

The Section shall hold an annual meeting for the election of officers on the second Saturday in April of each year. A report of the proceedings of the Section for the fiscal year of the Association shall be sent by the Recorder to the Secretary of the Association in advance of the annual meeting of the latter.

V

These Bylaws may be amended by a majority vote at any meeting of the Section, if approved by the Sectional Committee, or

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provided notice in writing has been given to all members at least two weeks previously.

Mr. Howard H. Cleaves exhibited a revolving back auto graflex and explained its use.

Mr. Alanson Skinner showed and presented the skull of an opossum, recorded at the previous meeting as having been found at Princes Bay.

Mr. G. P. Engelhardt, of the Brooklyn Museum, exhibited specimens of the bella moth, showing a wide variation of forms, from the Texan and Porto Rican *Utetheisa ornatrix* L. to the Cuban and Jamaican *U. venusta* Dalm. and the typical *U. bella* L. of Cuba and our own locality, back to the *U. venusta* Dalm. of Porto Rico, again running into the *U. pulchella* of Europe.

Dr. Arthur Hollick read a paper on "Photographing a Crow's Nest with Young," sent by Mr. George S. Humphrey together with four photgraphs. The nest was found in a tree near Martling's Pond, and had been photographed by Clarence T. Busteed, who had published the article in *Country Life in America.*

Dr. Hollick commented on some grasses and sedges found in ballast near Arlington, Staten Island, during the past summer and exhibited mounted specimens of several of these, some of which were new to this region. (Printed in full in this issue, p. 189.)

Mr. William T. Davis showed a list of Staten Island moths prepared by himself. He exhibited also some specimens of nuts showing the way mice and squirrels gnaw the nuts to get the kernel.

Mr. C. L. Pollard exhibited and commented on some eggs of crows from Staten Island.

APRIL 24, 1909

The meeting was held in the museum.

Mr. Alanson Skinner reported having seen, on the afternoon preceding the meeting, two larval *Spelerpes ruber* at Horseshoe Spring, and a blacksnake some distance away basking in the sun on a rock.

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Mr. James Chapin exhibited a male American toad, *Bufo americanus,* collected at Van Cortlandt Park, New York, about April 16, 1909. This species has not been found on Staten Island, where its place is taken by *B. fowleri,* but is rather common at the locality mentioned above. Most of the American toads at Van Cortlandt Park had ceased singing by April 22, while Fowler's toad was first heard this year on April 17, by Mr. Howard H. Cleaves. He showed also a four-toed salamander, *Hemidactylium scutatum,* taken at Annandale, Staten Island, on April 4, 1909. This is the only specimen of this species that has been reported from Staten Island for some years.

JOINT MEETING, MAY 8, 1909, WITH THE BROOKLYN ENTOMOLOGICAL SOCIETY AND THE NEW YORK ENTOMOLOGICAL SOCIETY

The meeting was held in the museum, Mr. Charles L. Pollard, chairman of the section, presiding, and 25 persons present.

After a brief address of welcome by the chairman and a vote of thanks to Mr. C. A. Ingalls for furnishing his stereopticon, Professor John B. Smith, president of the Brooklyn Entomological Society, took the chair.

Mr. Charles Schaeffer, of the Museum of the Brooklyn Institute, read a paper on Rudimentary and Vestigial Structures in Insects. Rudimentary structures, he defined, are those which are beginning to exist or are being evolved. Vestigial structures are those which are diminishing in usefulness and tending to disappear. Of rudimentary structures in insects none could be quoted to a certainty. He exhibited a series of insects with vestigial parts. In the *Strategus* group of the Scarabæid beetles the thoracic horn conspicuous on the male is replaced by an indentation on the females, but intergrading females show the horns in a descending scale of size. The male humble bee of several species shows vestiges of the pollen basket on the tibiæ. Where Coleoptera have become wingless there is usually a vestige

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of wing remaining. *Pasimachus californicus* and a species of *Callosoma* were quoted. In a species of *Diapheromera* from the Dry Tortugas the two pairs of wings are clearly developed although too small to be of any use. For mouth parts comparison was made between species of sphinx, in which the tongue (*i. e.,* maxillary palpi) was longer than the body, and *Samia cecropia* whose palpi are scarcely visible. *Hornia minutipennis,* from Utah, a beetle parasite in the burrows of bees, never emerges, hence its wings are lost and the elytra greatly reduced. The females resemble the helpless bee larvæ. Both sexes have large abdomens but differ in their antennæ. Certain Diptera that live in the nests of ants have lost considerable wing area. Workers with vestigial wings are not uncommon.

Mr. Charles W. Leng suggested speculations whether or not the short elytra of the Staphylinid beetles might not be rudimentary.

Dr. Smith suggested the possibility that the mouth parts of the *cecropia* might be rudimentary, since the moths are supposed to be descended from the caddis flies, whose mouth parts are not well developed.

Mr. Leng read a paper entitled Notes on Interesting Coleoptera, discussing especially the species of the Scarabæid genus *Diplotaxis* known to occur on Staten Island (published in full in this issue, p. 198).

Mr. Charles L. Pollard exhibited and commented on certain rare North American Saturnian moths, notably *Copaxa lavendera* of Mexico, which presents not only sexual dimorphism but great individual variation, especially in the males. A number of specimens of *Samia columbia nokomis* Brodie, raised from cocoons received from Rev. Clement Hoyler, of Alberta, Canada, were exhibited. Mr. Pollard stated that this variety was as much entitled to specific rank as *S. gloveri.*

Mr. George P. Engelhardt briefly discussed Thayer's theory of obliterative coloration as applied to insects. A number of illustrative examples were cited.

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Mr. Charles W. Leng, President of the New York Entomological Society, then assumed the chair, and Professor John B. Smith gave a lecture, illustrated by the stereopticon, on The Mosquito Problem.

A test count of mosquito larvæ in a small pond warranted an estimate that "in 20,000 square feet of water there were 10,600,000" wrigglers. These mosquitoes produced six to eight broods annually. The exterminations of this menace to health cost $35.

The dense swamps in forests are seldom breeding places. A pond covered with duck weed or other heavy vegetation gives the enemy little breathing place. The *Anopheles,* the malaria carrier, prefers semi-open water with sandy sloping banks. In towns the worst haunts are in casual pools, or various bodies of water artificially created. A trolley road to Coney Island, by cutting off the water ways beneath the track, has created an enormous area of ideal breeding places. The open village gutter where the water can collect is a menace of the first importance.

For the great area of salt marsh the only remedy is draining. So far, about 3,000,000 feet of drainage ditch have been dug in New Jersey. The work on Staten Island has made very good progress, thanks entirely to health officer Doty.

Ditches were formerly dug about 18 inches deep. These filled. The new ditch is three feet deep. The section of excavation shows that the upper half is a mass of roots. In after years the upper half of the ditch tends to close somewhat, leaving a clear drain beneath. The ditch drains satisfactorily about 100 feet on either side. Of course the ditch must have a mouth in open water. They occasionally have to be 2,000 feet long.

In one instance, where an outlet was distant, satisfactory results were obtained by centering the ditches at a large excavation dug down until the water was influenced by the tide. This was kept stocked with "killies," which would thrive well were it not for the depredations of the turtles. As it is, the pool is stocked each year at trifling expense.

Instance after instance can be cited where land held almost

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valueless from lack of drainage and the mosquito nuisance, has been redeemed and become residential sections.

The cost of drainage has been reduced greatly by the introduction of digging machines. By hand three men can dig almost 600 feet of ditch a day. Two types of spade have been developed, cutting a sod 10 inches wide and 36 deep. With a spading machine, of which a number of patterns have been made, the same force can dig about three times as much.

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Proceedings of the Section of Art

At a meeting of the Board of Trustees of the Association held March 5, 1909, the application of certain members of the Association for permission to form a Section of Art was granted.

The first meeting was held March 10, 1909, at the museum.

Dr. John Quincy Adams was elected chairman. Pending his acceptance, Mrs. T. Livingstone Kennedy was elected temporary chairman. The committee of twelve, known as the Art Committee, was reappointed as the Committee on Exhibits of the Section, Mrs. Kennedy continuing as its chairman. Mrs. William G. Willcox, Mrs. Park J. White, and Miss S. Gertrude Clark were appointed a committee to prepare a plan of permanent organization.

Mrs. Willcox presented a paper on "Lowestoft Ware" (printed in full in this issue, p. 179).

At the meeting held April 6, 1909, the Section elected the following officers: Mrs. C. W. Hunt, Vice-chairman; Miss Edith M. Pollard, Recorder; Mrs. William G. Willcox, chairman of the Committee on Public Meetings.

Mrs. J. Q. Adams presented a paper on "Wedgewood" and Mrs. T. Livingstone Kennedy one on "Old China."

The following are the bylaws adopted by the Section:

BYLAWS, SECTION OF ART

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

I

The officers of the Section shall be a Chairman, Vice-Chairman, and Recorder. They shall be elected annually, by ballot.

II

The duties of the Chairman, Vice-Chairman, and Recorder shall be such as usually pertain to those officers. In addition to keeping a record of the proceedings of the Section, the Recorder

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shall have charge of all moneys received or expended by the Section, subject to the instruction of the Sectional Committee.

III

There shall be two standing committees in the Section, whose duties shall be as follows: The Committee on Exhibits shall have general direction of the art exhibits loaned to the Museum, subject to the authority of the Trustees of the Association. The Committee on Public Meetings shall have charge of the arrangements for public meetings, lectures or entertainments given under the auspices of the Section. These committees shall be appointed by the Chairman of the Section at the annual meeting. The Chairman of the Section and the Curator-in-chief shall be ex-officio members of both standing committees.

IV

The officers of the Section, together with the Chairman of the two standing committees, shall constitute the Sectional Committee, which shall be empowered to transact all business of the Section not otherwise provided for.

V

The Section shall hold an annual meeting for the election of officers in April of each year subject to the call of the Chairman, and at such other times as may be determined. One-sixth of the total membership shall constitute a quorum of the Section.

VI

A report of the proceedings of the Section for the fiscal year shall be sent by the Recorder to the Secretary of the Association in advance of the annual meeting of the latter.

VII

These Bylaws may be amended by a majority vote at any meeting of the Section, if approved by the Sectional Committee, or provided notice in writing has been given to all members at least two weeks previously.

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1. Proceedings of the Natural Science Association of Staten Island.

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

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Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

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3. The Museum Bulletin

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VOL. III October–December, 1909 Part I

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OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
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ARTS AND SCIENCES

VOL. III OCTOBER–DECEMBER, 1909 PART I

List of the Macrolepidoptera of Staten Island, New York

WILLIAM T. DAVIS

It is not supposed that the following list is complete, and many additions are expected, but on the other hand some of the species mentioned will probably not again be found, owing to the city conditions which are prevailing over an ever wider area of the island.

Thecla augustus is one of the butterflies that has steadily decreased in numbers, owing probably to the frequency of forest fires. Some other species, as *Colias caesonia,* have been found on the island during only a single summer, and still others, like *Terias nicippe* and *Pyrameis cardui,* sometimes occur in considerable numbers and have then not been seen again for several years. As a rule Lepidoptera are more numerous when the summer is rather dry, thus preventing a great mortality to the larvae through fungus diseases. These were the conditions in several of the years covered by this record, notably the summers of 1901 and 1910. So the years differ considerably from one another to a collector of insects, who goes afield ever expecting a surprise.

In the following list, the months when the insects were collected have been mentioned, and for the greater part the notes that accompanied portions of the list previously published have

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been included.[1] Some of the more important records have also been recorded in the second and third editions of Prof. J. B. Smith's New Jersey list. The specimens have been compared in many instances with those in various public museums and private collections, and several specialists have done me the honor of looking carefully over my collection. The identifications are therefore doubtless generally correct. Mr. Charles P. Benedict, of West New Brighton, and Mr. Oscar Fulda, of Stapleton, have added some species to the list, and the names of several other collectors are mentioned in connection with the species obtained by them.

Family NYMPHALIDAE

Danais plexippus Linnaeus. May to November inclusive. I have never found any hibernating on the island. The first individuals to arrive are usually females, although males have been taken in May. They do not become numerous before August. On September 29, 1889, fourteen of these butterflies were counted about a single plant of the New England aster, and their terra cotta colors contrasted well with the purple flowers. They are often quite common on the seashore and alight on seaweed and other objects cast up by the waves. On November 25, 1894, a male was found in a sheltered situation on the side of a bank at Tottenville. It was a fresh, bright specimen, and had evidently been frozen to death. Probably none of our butterflies fly higher than this one, often among the swallows. It does not always beat its wings but sails with them spread in somewhat the same manner as do many birds. What may possibly be called a migration of this species was observed on August 27, 1885, when many monarch butterflies were seen flying slowly westward along a

[1] The following partial lists have been previously published: Butterflies of Staten Island, Proc. Nat. Sci. Assoc. Staten Island 1: 5. F 1884; Catalogue of the Butterflies of Staten Island, New York, Journ. N. Y. Ent. Soc. 1: 1. Mr 1893; Staten Island Hawk Moths, Proc. Nat. Sci. Assoc. Staten Island 8: 47–48. Ja 1903; Preliminary List of Staten Island Moths Belonging to the Families Saturniidae, Ceratocampidae, Syntomidae, Arctiidae, and Agaristidae, Proc. Nat. Sci. Assoc. Staten Island 9: 15–16. Mr 1904.

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road. The day before had been cold for a day in August. The New York papers of September 8, 1899, contained articles on the invasion of the city by butterflies. It was a migration of this species, and on the date mentioned we found them at 9 a.m. settled quietly on an ailanthus tree in Battery Park. Very few were flying about until a ball made of newspaper was cast into the tree, when there was a great display of fluttering butterflies, a hundred or more hovering about the tree.

Euptoieta claudia Cramer. This is not a common species on the island. Less than a dozen specimens have been seen and these usually in late summer and fall. The earliest record is July 11, at Richmond Valley. Two specimens were observed by Mr. Charles L. Pollard at Dongan Hills on September 18, 1910.

Argynnis idalia Drury. Last days of June through July, August, and September.

Argynnis cybele Fabricius. June, July, August, and September. The males appear in numbers in June a day or so before the females.

Argynnis aphrodite Fabricius. A single specimen taken on June 29. One seen at close range in the Clove Valley by Mr. Frank E. Watson on August 2, 1908.

Argynnis myrina Cramer. May to September inclusive.

Argynnis bellona Fabricius. June, July, and August. Formerly found in the Clove Valley, but none have been seen there in recent years. Mr. Frank E. Watson collected a single specimen in Buck's Hollow on August 7, 1910.

Melitaea phaeton Drury. Has been found in several meadows in May and June, sometimes in considerable numbers.

Phyciodes tharos Drury. Early May to October inclusive. A caterpillar was found near Richmond on March 29, 1903, under a chip. It pupated on the same day, and the butterfly hatched on April 20.

Grapta interrogationis Fabricius. To be seen throughout the warm weather, and occasionally early in the spring.

Grapta comma Harris. Less common than the last, but appearing at the same time.

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Grapta progne Cramer. As with the other members of the genus, hibernated examples appear in March and April and fresh specimens in midsummer. While sitting in the sun near Richmond village on February 24, 1906, I noticed a *Grapta* butterfly settle on an oak leaf lying on the ground, intent also upon warming itself in the sun. I tried to draw near in order to identify the species positively, but even with my glass I was not sure, although I thought it was *progne*. The butterfly was very much afraid of me while it was on the ground. When it flew off I noticed that it lit on the fallen branches of a tree about a yard from the ground and that it had closed its wings. It then allowed me to approach, and I saw plainly that it was *progne*. I reached out my hand and picked it off from the branch. It did not struggle, but folded up its legs and kept quiet. So it remained lying flat in my open hand, and I carried it to a sunny place and put it on an oak leaf, where it lay as if dead. After a while it began to tremble, and presently it jumped up and before one could say "*Grapta progne*" had flown away.

Grapta j-album Boisduval & Leconte. Hibernated individuals in early spring and fresh examples in midsummer. About one-half of the specimens taken on the island have been found in dwellings, usually in the fall. It is more apt to enter houses than any other of our native butterflies, not even excepting *Vanessa antiopa*.

Vanessa antiopa Linnaeus. Sometimes seen as early as the latter part of February and as late as November. The red seed clusters of the sumac are sometimes in the spring attractive perching places for individuals that have awakened from their hibernation.

Vanessa milberti Godart. One specimen taken near Silver Lake by Mr. Gustav Beyer in October, 1886. Seen at Clifton by Mr. Oscar Fulda on October 13, 1902, and on September 25, 1910.

Pyrameis atalanta Linnaeus. March to November inclusive. One seen December 13, 1891.

Pyrameis huntera Fabricius. Early spring to November inclusive.

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Pyrameis cardui Linnaeus. August, September, and October, but not common. Plentiful in September, 1884. A single example near Richmond, April 24, 1897.

Junonia coenia Hübner. June to November inclusive. Often very common on dusty roads, where it sometimes chases the Carolina grasshoppers.

Limenitis ursula Fabricius. Occasional in May, a few in June, common in late July and throughout August, and a few in September. I have found the caterpillars leaving their hibernacula on the first day of May. This, like some other butterflies, is fond of carrion, and is often attracted by decaying fruit. Mr. Alanson Skinner and Mr. James Chapin collected a female specimen of the variety *albofasciata* Newcomb fresh from the chrysalis near Woodrow, August 25, 1907.

Limenitis archippus Cramer. June to September inclusive. On October 9, 1887, a single specimen was seen.

Family SATYRIDAE

Neonympha canthus Boisduval & Leconte. June to September.

Neonympha eurytris Fabricius. Last days of May through June and July to the first days of August.

Satyrus alope Fabricius. June to September inclusive. This butterfly, like the preceding, will sometimes assemble in considerable numbers about an old log or stump and occasionally on the ground.

Family LIBYTHEIDAE

Libythea bachmanni Kirtland. Two seen on August 11, 1888, about the hackberry trees (*Celtis occidentalis*) at the old fort near Richmond village.

Family LYCAENIDAE

Thecla melinus Hübner. May to September inclusive.

Thecla calanus Hübner. June, July.

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Thecla damon Cramer. Taken by Mr. Charles W. Leng at Watchogue May 8, 1881.

Thecla augustus Kirby. April and May. Formerly common at Watchogue and other sandy portions of the island, but less plentiful in recent years.

Thecla irus Godart. April and May. It has been found at Watchogue, near Four Corners, on Todt Hill, and in the woods between the Black Horse Tavern and Richmond.

Thecla niphon Hübner. Common on May 8, 1881, along a sandy road at Watchogue. None have been seen since.

Thecla titus Fabricius. July and August.

Feniseca tarquinius Fabricius. Taken by Mr. A. C. Weeks June 21, 1885, and by Mr. R. P. Dow August 4, 1907. Two collected at Woodrow August 21, 1910. The caterpillars are sometimes found in colonies of the woolly plant lice on the alder bushes.

Chrysophanus thoe Boisduval. Three specimens have been found on the island: one in the Clove Valley on June 20, 1896, by Mr. A. C. Weeks; one at Karle's Neck, near New Springville, on September 12, 1897; and one near Chelsea on August 12, 1910.

Chrysophanus hypophlaeas Boisduval. May to October inclusive.

Lycaena ladon Cramer. Including the seasonal forms, from March to September. The forms *lucia, marginata,* and *violacea* occur in the spring.

Lycaena comyntas Godart. Last of April to September inclusive.

Family PIERIDAE

Pieris protodice Boisduval & Leconte. Taken on the shore in 1882, near the present location of the St. George ferryhouse. Others have been collected in various parts of the island in June, July, August, and September. The variety *vernalis* Edwards was taken at Tottenville on April 19, 1902.

Pieris napi oleracea Boisduval. The late Mr. August R. Grote has written me as follows: "I believe that I remember clearly

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that I took *P. oleracea* on Staten Island between 1856 and 1859." At present the occasional specimen does not attract attention among the similarly colored imported cabbage butterflies.

Pieris rapae Linnaeus. March to November inclusive.

Catopsilia eubule Linnaeus. Usually appears in September about the middle of the month, and in some years is quite common. Two specimens, one of which was captured, were found near the Billopp house, at Tottenville, October 4, 1903.

Colias caesonia Stoll. The dog's head butterfly was unknown in the vicinity of New York City until the summer of 1896. In June of that year Captain Robert D. Wainwright captured a single specimen on the island at Eltingville. On July 11, in a partly overgrown field at Kreischerville, near the Ultramarine works or "Blue factory," as it is locally called, I saw a number of *C. caesonia.* A few hovered about the butterfly weeds (*Asclepias tuberosa*), but most of them were carried across the open ground by the strong breeze then blowing. There was less wind the next day, when the same field was visited, and the butterflies seemed slightly more inclined to light on the *Asclepias.* My plan consisted in sitting under a persimmon tree in the middle of the field, and when a butterfly came into the clearing I tried to catch it. In this way two specimens were captured in about an equal number of hours, and a few others, which were mostly in a great hurry, were seen. The field was again visited on July 25, but the butterflies had disappeared. During this same summer the species was taken for the first time in Canada, near Toronto and in southern Manitoba. Since 1896 it has not been recorded as far north as Staten Island.

Colias eurytheme Boisduval. This butterfly was seen in a field near Richmond on October 20, 1900. As I did not have a net with me the insect escaped, but it was approached to within less than a yard, so the identification is certain.

Colias philodice Godart. April to November inclusive. A single specimen flying on Todt Hill December 6, 1891.

Terias nicippe Cramer. Appeared in June, 1880, and was very common through the summer and fall. Two males were

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collected in the fall of 1891, one on September 19 and the other on October 4. A male was collected May 10, 1896, on Todt Hill. In the summer of 1906 the butterfly was seen in some numbers in the Clove Valley, where there is a growth of *Cassia marylandica*, the food plant of the larva; and several males were observed elsewhere on the island. In 1907 about ten were seen, in August, and several collected in Buck's Hollow near Richmond, where *Cassia* also grows. A single male was seen at Chelsea August 12, 1910.

Terias lisa Boisduval. July to October inclusive. Most common on the sandy portions of the island.

Family PAPILIONIDAE

Papilio ajax Linnaeus. This butterfly was observed by Mr. William Beutenmüller and myself on July 5, 1886, near Bull's Head. Another was seen on June 30, 1889, near Old Place, and still another on June 14, 1902, at Tottenville. On August 5, 1902, Mr. Oscar Fulda captured two specimens at Concord.

Papilio philenor Linnaeus. This species has been observed flying on the island on May 6, October 27, and November 2. On the last mentioned date a fresh specimen was seen. It is more common at times between these dates. The appearance of fresh examples apparently out of season can be better understood when some of the erratic ways of the species are mentioned. In July, 1896, five *philenor* caterpillars changed to the chrysalis stage in a breeding cage. Three hatched in the latter part of the month. It was observed that the other two were not dead. After some time had elapsed one was opened and found to be in good condition. The box was then placed in an attic where the temperature was more nearly the same as outdoors. On May 18, 1897, a male emerged from the remaining chrysalis. Under natural conditions this butterfly would have been contemporaneous with his nephews and nieces, all of his generation that emerged from the chrysalis state during the previous summer being dead. The caterpillars feed on the Dutchman's pipe vine late in the fall, and apparently many of them die of the cold. They are accustomed to a longer season in the south.

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Papilio polyxenes Fabricius. May to October inclusive.

Papilio troilus Linnaeus. May to September inclusive.

Papilio turnus Linnaeus. May to September inclusive.

Papilio thoas Linnaeus. Several were captured in August and September, 1882, and in 1893 a few were seen. Since that date it has been observed in the Moravian cemetery, where there are some bushes of *Ptelea trifoliata,* the food plant of the larva.

Family HESPERIDAE

Ancyloxypha numitor Fabricius. May to September inclusive.

Pamphila massasoit Scudder. July and August. Two from the meadows near the foot of New Dorp Lane August 8, 1885, and plentiful near Bull's Head on July 19, 1891.

Pamphila zabulon Boisduval & Leconte. May, June, August, September, and October.

Pamphila hobomok Harris. May, June, and July. On a cool and shady morning in the latter part of May, upon looking among the bushes and young trees on the edge of a field, I found four Pamphilas in the positions they had chosen in which to spend the previous night. Three of them were *P. hobomok,* and the fourth was *P. sassacus.* All were resting on the tops of the leaves, in the shade or protection of overhanging branches.

Pamphila sassacus Harris. May and June.

Pamphila metea Scudder. Collected at Tottenville in June by Captain Robert D. Wainwright.

Pamphila leonardus Edwards. One female collected at Mariners' Harbor on September 25, 1887, and one male on Todt Hill September 22, 1888.

Pamphila otho Smith & Abbot. June, July, and August.

Pamphila peckius Kirby. May to September inclusive.

Pamphila mystic Scudder. June.

Pamphila manataaqua Scudder. May, June, July.

Pamphila cernes Boisduval & Leconte. May to September inclusive.

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Pamphila verna Edwards. June, July, and August.

Pamphila metacomet Harris. June, July.

Pamphila ocola Edwards. This rare butterfly was taken at Annadale in September, 1896, by Captain Robert D. Wainwright.

Pamphila pontiac Edwards. July, August.

Pamphila fusca Grote & Robinson. Captain Wainwright and I collected several in a field near the Billopp house, at Tottenville, June 20, 1897.

Pamphila viator Edwards. Not uncommon at the edge of the salt meadows near Butler's pond, Dongan Hills, in July, 1898, and in July, 1900.

Pyrgus tessellata Scudder. August, September, and October at Tottenville, and one near the Morgan road, Karle's Neck, September 8, 1895.

Nisoniades brizo Boisduval & Leconte. April, May, and June, on the more barren hills and sandy districts.

Nisoniades icelus Lintner. Several specimens taken in May.

Nisoniades persius Scudder. May to September inclusive.

Nisoniades martialis Scudder. A single specimen collected on the hill west of the Clove Valley near the cave, by Mr. Oscar Fulda, May 3, 1902. One found near Reed's Valley, Todt Hill, August 10, 1909.

Nisoniades juvenalis Fabricius. Early May to October.

Pholisora catullus Fabricius. May to August inclusive.

Eudamus pylades Scudder. June, July.

Eudamus bathyllus Smith & Abbot. May, June, and July.

Eudamus lycidas Smith & Abbot. May, June, and July.

Eudamus tityrus Fabricius. May to September inclusive.

Family SPHINGIDAE

Hemaris thysbe Fabricius. I have always found the typical form in July and August, and the variety *ruficaudis* in May and June.

Amphion nessus Cramer. This insect often flies in the brightest sunshine, and may be seen occasionally about the flowers of the blackberry in June.

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Sphecodina abbotii Swainson. May, June, July.

Deidamia inscriptum Harris. May, June.

Deilephila lineata Fabricius. July, August, September; also on October 23, 1900. As an illustration of the powerful flight of the Sphingidae I may mention that one day in August, several years ago, I observed several English sparrows endeavoring to capture a specimen of *D. lineata.* The moth flew in circles while the sparrows made vain efforts to head it off. This species, which usually flies in the morning and evening twilight, also flies occasionally at noonday. I have seen it in the brightest sunshine, visiting the flowers of a thistle.

Theretra tersa Linnaeus. May, June, August, September. This insect has been taken at petunia flowers, which are also attractive to other hawkmoths.

Pholus pandorus Hübner. June, July, August. A specimen has been given to me by Mr. Alanson Skinner, collected at New Brighton in the early part of November.

Pholus achemon Drury. June, July, August.

Ampelophaga choerilus Cramer. June, July, August.

Ampelophaga myron Cramer. May, June, July, August. This and its congener are often attracted by the mixture called "sugar," ordinarily prepared for noctuid moths.

Phlegethontius quinquemaculata Haworth. June, July, August, September. This, like many other Sphingidae, is quite dazed when disturbed in the daytime. I once found one on a fence and threw it into the air. It flew about in circles for a considerable time before it selected a definite direction.

Phlegethontius sexta Johanssen. June, July, August, September. The Carolina sphinx and the five-spotted sphinx visit the funnelshaped flowers of the two species of *Datura.* Many of them are killed by the electric lights, and I have found as many as ten specimens of *P. quinquemaculata* about one lamp.

Phlegethontius rustica Fabricius. A single individual captured at an electric light near Four Corners, and now in the museum of the Staten Island Association of Arts and Sciences.

Sphinx kalmiae Smith & Abbot. August.

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Sphinx drupiferarum Smith & Abbot. June.

Sphinx gordius Stoll. May.

Sphinx chersis Hübner. June, July.

Sphinx eremitus Hübner.

Sphinx plebeius Fabricius. May, June, July.

Chlaenogramma jasminearum Boisduval. July.

Ceratomia amyntor Hübner. May, June.

Ceratomia undulosa Walker. May, June, July, August.

Lapara bombycoides Walker. Under an electric light at Egbertville, July 15, 1907. (O. Fulda.)

Triptogon modesta Harris. The caterpillar has been found on the island.

Smerinthus geminatus Say. August.

Paonias excaecatus Smith & Abbot. July.

Paonias myops Smith & Abbot. June.

Cressonia juglandis Smith & Abbot. June.

Family SATURNIIDAE

Philosamia cynthia Drury. June, July, August. This imported insect was first noticed on Staten Island about 1882.

Samia cecropia Linnaeus. June, July, August.

Callosamia promethea Drury. June, July, August. Several years ago fifteen cocoons of this species were collected from the same tulip tree and kept separate from all others, for the purpose of noting at what time the moths would emerge therefrom. The dates were as follows: June 9, one male; June 16, one male; June 17, one male; June 20, one female; June 23, one female; June 30, one male and one female; July 3, one female; July 7, two females; July 8, two males; July 11, three females.

Callosamia angulifera Walker. June, July, August. The cocoons are to be found on the ground under the trees on which the caterpillars have fed. The tulip tree (*Liriodendron tulipifera* L.) seems to be the favorite food plant.

Tropaea luna Linnaeus. April to September inclusive. Double-brooded and occasionally triple-brooded. I have raised

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two generations of caterpillars from eggs laid by a moth collected at Kreischerville on July 11. In Proc. Nat. Sci. Assoc. Staten Island 4: 71. 13 Ap 1895, is given an account of Scarlet-margined Luna Moths. This form has been found on the island in the spring only.

Telea polyphemus Cramer. June, July, August.

Automeris io Fabricius. June, July, August.

The allied *Hemileuca maia* Drury has been found in various parts of New Jersey not far removed from the island, and no doubt is to be found here also.

Family CERATOCAMPIDAE

Anisota stigma Fabricius.

Anisota senatoria Smith & Abbot.

Anisota virginiensis Drury. May, June, July.

Anisota rubicunda Fabricius. May, June, July, August. I am indebted to Mr. Louis H. Joutel for identifying several caterpillars of this genus.

Citheronia regalis Fabricius. June, July.

Basilona imperialis Drury. June, July, August.

Family SYNTOMIDAE

Scepsis fulvicollis Hübner. June, July, August, September, October 21, 1900.

Lycomorpha pholus Drury. It has been found in midsummer, but seems to be a rare species on the island.

Family ARCTIDAE

Eubaphe immaculata Reakirt. May, June.

Eubaphe aurantiaca Hübner.

Form **rubicundaria** Hübner. August.

Form **ferruginosa** Walker. June.

Form **brevicornis** Walker. June.

Utetheisa bella Linnaeus. June 27, August, September, October, November 1, 1903.

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Haploa clymene Brown. Quite abundant in July and August, 1890. October 20, 1904 (C. P. Benedict).

Ecpantheria deflorata Fabricius. The larvae have been found on the island.

Estigmene acraea Drury. May, June, July, August.

Estigmene congrua Walker. May, June, August.

Hyphantria cunea Drury. April, May, June, July, August.

Hyphantria textor Harris. Usually not considered distinct from *cunea.*

Isia isabella Smith & Abbot. May, June, July, August, September.

Phragmatobia fuliginosa Linnaeus. June, July, August.

Diacrisia virginica Fabricius. June, July, August.

Diacrisia latipennis Stretch. May, June.

Apantesis virgo Linnaeus. At light, Egbertville, August 8, 1907.

Apantesis virguncula Kirby. Four Corners (Jacob Doll).

Apantesis arge Drury. April, May, July, August.

Apantesis nais Drury. May, June, July, August.

Apantesis vittata Fabricius. April, June, July, August, September.

Apantesis vittata phalerata Harris.

Ammalo tenera Hübner. June, July, August.

Ammalo eglenensis Clemens. June.

Euchaetias egle Drury. June.

Halisidota tessellaris Smith & Abbot. May, June, July.

Halisidota caryae Harris. May, June. A note in Proc. Nat. Sci. Assoc. Staten Island 1: 4. 9 F 1884, records the fact that a number of these moths, hatched under the influence of artificial heat in midwinter, emerged from the cocoons about 7 p.m. In May and June this would have been the proper hour, for they could have dried their wings by the last rays of the setting sun. In December and January it was much too late, and the moths were found to move their positions so as to receive the full rays from the lamp.

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Family AGARISTIDAE

Alypia octomaculata Fabricius. June, July.

Family NOCTUIDAE

Raphia frater Grote. June.

Apatela americana Harris. June, July.

Apatela hastulifera Smith & Abbot. The larva has been found in the Clove Valley on alder, and the moth has been taken in July.

Apatela dactylina Grote. May, July.

Apatela innotata Guenée. May, July.

Apatela morula Grote. May, July, August.

Apatela interrupta Guenée. July, August, September.

Apatela lobeliae Guenée. April, May, June, July, August.

Apatela hasta Guenée. April, May, July, August.

Apatela clarescens Guenée. May, June, August, September.

Apatela hamamelis Guenée. June.

Apatela lithospila Grote.

Apatela tritona Hübner. June, July.

Apatela connecta Grote. June, July, August.

Apatela funeralis Grote. The ornate caterpillar of this species was found at New Brighton, August 6, 1905, and determined by Dr. Harrison G. Dyar.

Apatela vinnula Grote. June, July.

Apatela increta Morrison. May, June.

Apatela modica Walker. June.

Apatela ovata Grote. July.

Apatela retardata Walker. May, June, July, August.

Apatela noctivaga Grote. May.

Apatela xyliniformis Guenée. June, August.

Apatela impleta Walker. May, June.

Apatela oblinita Smith & Abbot. May, June, August.

Arsilonche albovenosa Goeze. May, August.

Harrisimemna trisignata Walker. June, August.

Microcoelia dipteroides Guenée. May, June, July, August.

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Microcoelia dipteroides obliterata Grote.
Diphthera fallax Herrich-Schaeffer. May.
Chytonix palliatricula Guenée. July.
Baileya ophthalmica Guenée. May.
Crambodes talidiformis Guenée. August.
Platysenta videns Guenée. May, July, August, September.
Balsa malana Fitch. May, June, August.
Balsa tristrigella Walker. June.
Caradrina miranda Grote. June.
Perigea xanthioides Guenée. July, August, October.
Perigea vecors Guenée. July, August, October.
Perigea epopea Cramer. June, September, October.
Perigea sutor Guenée. July, August, September, October.
Oligia festivoides Guenée. May, June.
Oligia grata Hübner. July, October.
Hadena modica Guenée. July, August.
Hadena turbulenta Hübner. May, June, August.
Hadena miseloides Guenée. June, July, August.
Hadena semicana fractilinea Grote. August 7, 1904.
Hadena passer Guenée. May, June, August.
Hadena dubitans Walker. July, August.
Hadena impulsa Guenée. June.
Hadena devastatrix Brace. July, August.
Hadena arctica Boisduval. June, July, August.
Hadena verbascoides Guenée. April, July.
Hadena lignicolor Guenée. June, July.
Hyppa xylinoides Guenée. July, August.
Euplexia lucipara Linnaeus. June, July, August, September.
Dipterygia scabriuscula Linnaeus. August.
Actinotia ramosula Guenée. May, June, July, August.
Pyrophila pyramidoides Guenée. July, August, September.
Heliotropha reniformis Grote. July, August, September.
Prodenia commelinae Smith & Abbot. August, September, October.
Prodenia ornithogalli Guenée. July, August, September, October.

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Laphygma frugiperda Smith & Abbot. August, September, October.

Laphygma frugiperda obscura Riley.

Eutolype rolandi Grote. April (O. Fulda).

Psaphidia grotei Morrison. April 15.

Rhynchagrotis brunneicollis Grote. June 21, 1902 (O. Fulda).

Rhynchagrotis anchocelioides Guenée. September, October.

Rhynchagrotis alternata Grote. August, September, October.

Adelphagrotis prasina Fabricius. July, August.

Eueretagrotis perattenta Grote. June.

Semiophora elimata Guenée. September (C. P. Benedict).

Pachnobia manifesta Morrison. May (O. Fulda).

Pachnobia fishii Grote. Collected at Silver Lake, April 29, 1902, by Ernest Shoemaker.

Agrotis badinodis Grote. September.

Agrotis violaris Grote & Robinson. October.

Agrotis ypsilon Rottemburg. July to November inclusive.

Peridroma occulta Linnaeus. August.

Peridroma margaritosa Haworth. July to November inclusive.

Peridroma incivis Guenée. August, September, October.

Noctua smithii Snellen. August, September.

Noctua normaniana Grote. August.

Noctua bicarnea Guenée. August, September.

Noctua c-nigrum Linnaeus. June, August, September.

Noctua plecta Linnaeus. May, June, July, August.

Noctua clandestina Harris. June, July, September.

Feltia subgothica Haworth. August, September.

Feltia jaculifera Guenée. August, September.

Feltia gladiaria Morrison. September.

Feltia venerabilis Walker. September.

Feltia annexa Treitschke. August, September.

Porosagrotis vetusta Walker. September, October.

Paragrotis detersa Walker. September, October.

Paragrotis bostoniensis Grote. September, October.

Paragrotis messoria Harris. September.

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Paragrotis tessellata Harris. July, September.

Paragrotis redimicula Morrison. July.

Eucoptocnemis fimbriaris Guenée. Tottenville, September 21, 1902.

Anytus privatus Walker. August, September.

Mamestra meditata Grote. August, September.

Mamestra detracta Walker. June, July.

Mamestra distincta Hübner. April, May.

Mamestra subjuncta Grote & Robinson. June, July, August, September.

Mamestra grandis Boisduval. June.

Mamestra trifolii Rottemburg. May, June, July, August, September.

Mamestra congermana Morrison. May, July.

Mamestra picta Harris. May (C. P. Benedict).

Mamestra cristifera Walker. July.

Mamestra latex Guenée. May, June, July.

Mamestra adjuncta Boisduval. May, August.

Mamestra ligitima Grote. July, August.

Mamestra renigera Stephens. May, June, August, September.

Mamestra lorea Guenée. June.

Mamestra anguina Grote. Taken at Four Corners by Mr. Jacob Doll.

Morrisonia sectilis Guenée. April.

Morrisonia confusa Hübner. May.

Nephelodes minians Guenée. September.

Heliophila unipunctata Haworth. July to November inclusive.

Heliophila pseudargyria Guenée. June to September inclusive.

Heliophila albilinea Hübner. May, June, August, September.

Heliophila multilinea Walker. June, July, August, September.

Orthodes crenulata Butler. July, August.

Orthodes cynica Guenée. May, June.

Orthodes vecors Guenée. May, June, August.

Himella intracta Morrison. April.

Graphiphora alia Guenée. May.

Tricholita signata Walker. August, September.

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Xylina antennata Walker. May, September, October.

Xylina laticinerea Grote. February, March, April, October, November.

Xylina bethunei Grote & Robinson. September, October, November.

Calocampa curvimacula Morrison. April 20 (C. P. Benedict).

Cucullia convexipennis Grote & Robinson. July, August, September.

Cucullia asteroides Guenée. May, June, July, August.

Sphida obliqua Walker. June (O. Fulda).

Achatodes zeae Harris. July, August.

Gortyna velata Walker. June, July.

Gortyna nictitans Borkhausen. June, July, August.

Papaipema inquaesita Grote & Robinson. September.

Papaipema baptisiae Bird. September.

Papaipema purpurifascia Grote & Robinson. September.

Papaipema nitela Guenée. September, October.

Papaipema cerussata Grote & Robinson.

Papaipema cataphracta Grote. September.

Papaipema astuta Bird. Larva in *Collinsonia*. Identified by Mr. Henry Bird.

Papaipema duplicata Bird. Larva in *Collinsonia*. Identified by Mr. Henry Bird.

Papaipema impecuniosa Grote.

Papaipema moeseri Bird. Identified by Mr. Henry Bird.

Papaipema marginidens Guenée. September.

Pyrrhia umbra Hüfnagel. July, August, September.

Eucirroedia pampina Guenée. May, September, October, November.

Scoliopteryx libatrix Linnaeus. July, August, September.

Orthosia bicolorago Guenée. July to November, inclusive.

Orthosia helva Grote. August.

Scopelosoma moffatiana Grote. April.

Scopelosoma sidus Guenée. October.

Scopelosoma morrisoni Grote. February, April.

Scopelosoma devia Grote. May, October.

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Glaea viatica Grote. October.

Glaea inulta Grote. September, October.

Glaea sericea Morrison. October.

Chloridea virescens Fabricius. August, September.

Heliothis armiger Hübner. August, September, October.

Rhodophora florida Guenée. July, August.

Eupanychis spinosae Guenée. Taken at Tottenville in September by Mr. Frank E. Watson.

Schinia trifascia Hübner. July, August.

Schinia nundina Drury. August (C. P. Benedict).

Schinia lynx Guenée. June.

Schinia arcifera Guenée. August, September.

Schinia thoreaui Grote & Robinson. August 25 (O. Fulda).

Schinia marginata Haworth. May, July, August, September.

Schinia constricta Hy. Edwards. September 17, 1907. Apparently only a form of *S. marginata.*

Schinia brevis Grote. August, September.

Xanthopastis timais Cramer. This southern species was taken on Staten Island by Mr. Grote. (Can. Ent. 18: 95. May 1886.)

Psychomorpha epimenis Drury. April, May.

Euthisanotia unio Hübner. June, July.

Euthisanotia grata Fabricius. June, July.

Cirrhophanus triangulifer Grote. August (O. Fulda).

Plagiomimicus pityochromus Grote. August.

Plusiodonta compressipalpis Guenée. August.

Calpe canadensis Bethune. June, August.

Plusia aerea Hübner. June, August, September.

Plusia balluca Geyer. (C. P. Benedict.)

Euchalcia contexta Grote. July (C. P. Benedict).

Eosphoropteryx thyatiroides Guenée. July.

Autographa biloba Stephens. June, August.

Autographa verruca Fabricius. October.

Autographa precationis Guenée. May, June, July, September, October.

Autographa brassicae Riley. August, September, October.

Autographa basigera Walker. July, August.

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Autographa falcigera Kirby. May to November inclusive.
Ogdoconta cinereola Guenée. June, July, August, September.
Paectes abrostoloides Guenée. June, July, August, September.
Paectes oculatrix Guenée. August.
Marasmalus inficita Walker. May, June.
Alabama argillacea Hübner. September, October.
Anomis erosa Hübner. October.
Scolecocampa liburna Geyer. The larvae have been found in decayed logs.
Rivula propinqualis Guenée. August.
Doryodes bistriaris Geyer. May, July, August, September.
Phiprosopus callitrichoides Grote. June, August.
Eustrotia malaca Grote. June 7. Determined by Prof. John B. Smith.
Eustrotia concinnimacula Guenée. May.
Eustrotia synochitis Grote & Robinson. June, July.
Eustrotia muscoscula Guenée. May, June, July, August.
Eustrotia apicosa Haworth. May, June, July, August.
Eustrotia carneola Guenée. May, June, July, August.
Galgula hepara Guenée. July.
Lithacodia bellicula Hübner. August.
Metoponia obtusa Herrich-Schaeffer. June (O. Fulda), July.
Chamyris cerintha Treitschke. June, July.
Tarache delecta Walker. June.
Tarache erastrioides Guenée. June, July, August.
Tarache candefacta Hübner. May, June, July, August.
Spragueia leo Guenée. Identified by Mr. Grote.
Metathorasa monitifera Guenée. May, July, August.
Euherrichia mollissima Guenée. June.
Phalænostola larentioides Grote. August 14. Determined by Prof. John B. Smith .
Pangrapta decoralis Hübner. May, June, August.
Hyamia sexpunctata Grote. May (O. Fulda).
Hyamia perditalis Walker. July.
Homopyralis contracta Walker. June, July, August.
Drasteria erechtea Cramer. March to September.

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Drasteria crassiuscula Haworth. March to September.
Euclidia cuspidea Hübner. May, June, July, August.
Meliopotis limbolaris Geyer. Two specimens taken at Sandy Brook, June 18, 1905.
Meliopotis jucunda Hübner. One specimen taken at Richmond Valley, May 29, 1909.
Syneda graphica Hübner. April, May, June, July, August.
Catocala epione Drury. July, August.
Catocala vidua Smith & Abbot. September.
Catocala retecta Grote. August.
Catocala robinsonii Grote. August, September.
Catocala residua Grote. July, August.
Catocala judith Strecker. (O. Fulda.)
Catocala tristis Edwards. (J. Doll.)
Catocala cara Guenée. July, August, September.
Catocala amatrix Hübner. August, September.
Catocala amatrix nurus Walker. August.
Catocala concumbens Walker. August.
Catocala unijuga Walker. July, August, September.
Catocala briseis Edwards. July.
Catocala parta Guenée. July, August, September.
Catocala ultronia Hübner. July, August, September.
Catocala ilia Cramer. July, August, September.
Catocala innubens Guenée. July, August.
Catocala piatrix Grote. August, September.
Catocala neogama Smith & Abbot. July to October.
Catocala cerogama Guenée. August.
Catocala palaeogana Guenée. July, August.
Catocala muliercula Guenée. August, September.
Catocala antinympha Hübner. July, August.
Catocala habilis Grote. August.
Catocala grynea Cramer. July, August.
Catocala gracilis Edwards. July, August.
Catocala minuta Edwards. July, August.
Catocala amica Hübner.
Allotria elonympha Hübner. June, July, August.

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Euparthenos nubilis Hübner. June, July, August.

Hypocala andremona Cramer. One specimen captured September 26, 1886, near Bull's Head.

Phoberia atomaris Hübner. April.

Panapoda rufimargo Hübner. June, July.

Parallelia bistriaris Hübner. May, June, July, August, September.

Agnomonia anilis Drury. August.

Remigia repanda Fabricius. August, September, October.

Remigia repanda marcida Guenée. August, September, October.

Poaphila quadrifilaris Hübner. June, August.

Celiptera frustulum Guenée. May, June, July, August.

Anticarsia gemmatilis Hübner. September.

Zale horrida Hübner. June, July, August.

Ypsia undularis Drury. May, June, July, August.

Ypsia undularis aeruginosa Guenée. May.

Ypsia undularis umbripennis Grote. August.

Homoptera lunata Drury. May to November inclusive.

Homoptera unilineata Grote. May.

Homoptera obliqua Guenée. June, July, August.

Erebus odora Linnaeus. July, September. Three specimens of this largest North American noctuid have been collected on the island. Two were found in buildings and one was captured at "sugar." All of these specimens are females, as indicated by the three frenula.

Epizeuxis americalis Guenée. July, August, September.

Epizeuxis aemula Hübner. June, July, August.

Epizeuxis lubricalis Geyer. June, July, August, September.

Zanclognatha laevigata Grote. July.

Zanclognatha cruralis Guenée. May, June, July, August.

Zanclognatha marcidilinea Grote. August.

Hormisa litophora Grote. July.

Philometra metonalis Walker. June.

Chytolita morbidalis Guenée. May, June, July.

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Chytolita petrealis Grote. June 24. Prof. J. B. Smith gives this specific rank.

Renia salusalis Walker. July.

Renia discoloralis Guenée. July, August.

Renia sobrialis Walker. July.

Renia factiosalis Walker. August.

Bleptina caradrinalis Guenée. June, July, August, September.

Heterogramma pyramusalis Walker. May, July, August.

Gaberasa ambigualis Walker. May, August, September.

Palthis angulalis Hübner. May to September inclusive.

Bomolocha manalis Walker. June.

Bomolocha baltimoralis Guenée. April, May, June, July.

Bomolocha bijugalis Walker. (C. P. Benedict.)

Bomolocha abalinealis Walker. May, August.

Bomolocha sordidula Grote. June.

Plathypena scabra Fabricius. June to November inclusive.

Hypena humuli Harris. July, November.

Family NOTODONTIDAE

Apatelodes torrefacta Smith & Abbot. May, June, July.

Melalopha inclusa Hübner. May, June, July.

Datana ministra Drury. June, July.

Datana angusii Grote & Robinson. June, July.

Datana drexelji Hy. Edwards. June, July.

Datana major Grote & Robinson. June, July.

Datana perspicua Grote & Robinson. July, August.

Datana integerrima Grote & Robinson. June, July.

Datana contracta Walker. June, July.

Hyperaeschra stragula Grote. (O. Fulda.)

Lophodonta ferruginea Packard. May, July, August.

Lophodonta angulosa Smith & Abbot. August.

Nadata gibbosa Smith & Abbot. May, June, July, August.

Symmerista albifrons Smith & Abbot. July.

Heterocampa umbrata Walker. June.

Heterocampa manteo Doubleday. July, August.

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Heterocampa guttivitta Walker. June, July.
Heterocampa bilineata Packard. June (O. Fulda).
Misogada unicolor Packard. June, July.
Ianassa lignicolor Walker. June (O. Fulda).
Schizura ipomoeae Doubleday. June.
Schizura semirufescens Walker. June (C. P. Benedict).
Schizura unicornis Smith & Abbot. June, August.
Schizura badia Packard. May, June.
Schizura leptinoides Grote. One specimen taken, June 17, 1908.
Hyparpax aurora Smith & Abbot. June.
Cerura scitiscripta multiscripta Riley. June, July.
Cerura occidentalis Lintner. July, August.
Harpyia borealis Boisduval. May, June, July, August.
Harpyia cinerea Walker. June (O. Fulda), August (C. P. Benedict).
Fentonia marthesia Cramer. July.
Gluphisia septentrionalis Walker. August (C. P. Benedict).

Family THYATIRIDAE

Pseudothyatira cymatophoroides Guenée. July, August.
Pseudothyatira expultrix Grote. July.

Family LIPARIDAE

Hemerocampa leucostigma Smith & Abbot. July, August, September.

Family LASIOCAMPIDAE

Tolype velleda Stoll. September.
Malacosoma americana Fabricius. July.
Malacosoma disstria Hübner. June, July.

Family PLATYPTERYGIDAE

Eudeilinea herminiata Guenée. May, August.
Oreta rosea Walker. June, July, August.

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Drepana arcuata Walker. August, September.
Falcaria bilineata Packard. July, August.

Family GEOMETRIDAE

Dyspteris abortivaria Herrich-Schaeffer. May.
Nyctobia fusifasciata Walker. April.
Rachela bruceata Hulst. November, December.
Paleacrita vernata Peck. March, April.
Alsophila pometaria Harris.
Eudule mendica Walker. May, June, July.
Eudule meridiana Slosson. June 17, 1908.
Heterophleps triguttaria Herrich-Schaeffer. June, July.
Tephroclystis miserulata Grote. July, August. Larva feeds on cultivated geranium.
Eucymatoge intestinata Guenée. August.
Euchoeca albovittata Guenée. May, June, July, August.
Euchoeca inornata Hulst. May, June.
Hydria undulata Linnaeus. May, June.
Eustroma diversilineata Hübner. July, August, September.
Rheumaptera hastata Linnaeus. June, July.
Percnoptilota fluviata Hübner. May, June, July, August, November.
Mesoleuca lacustrata Guenée. April, May, June, July, August.
Mesoleuca intermediata Guenée. March, April, May, June.
Mesoleuca vasaliata Guenée. April (C. P. Benedict).
Hydriomena multiferata Walker. May, June.
Hydriomena latirupta Walker. June, July, September.
Petrophora ferrugata Clerck. May, July, August.
Haematopsis grataria Fabricius. May, June, July, August.
Erastria amaturaria Walker. July, August.
Deptalia insularia Guenée. July, August, September.
Cosymbia lumenaria Hübner. April, May, June, July.
Synelys alabastaria Hübner. June, July.
Synelys ennucleata Guenée. July, August.
Eois inductata Guenée. June, August.

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Chlorochlamys chloroleucaria Guenée. May, June, July, August.

Nemoria subcroceata Walker. June, July.

Synchlora aerata Fabricius. July, August.

Synchlora rubrifrontaria Packard. July.

Aplodes mimosaria Guenée. May, June.

Anaplodes remotaria Walker. May, June, July.

Orthofidonia vestaliata Guenée. July, August.

Heliomata cycladata Grote. June.

Psysostegania pustularia Guenée. May, June, July, August.

Gueneria basiaria Walker. June.

Deilinea liberaria Walker. September.

Sciagraphia heliothidata Guenée. May, July, August.

Philobia enotata Guenée. May, June, August.

Macaria aequiferaria Walker. May.

Cymatophora wauaria Linnaeus. June.

Apaecasia detersata Guenée. May, June.

Apaecasia defluata Walker. June.

Alcis atrolinearia Hulst. April.

Paraphia subatomaria Wood. June, August.

Paraphia subatomaria deplanaria Guenée. August.

Selidosema umbrosarium Hübner. May, June.

Cleora pampinaria Guenée. April, May, July, August.

Cleora larvaria Guenée. August.

Melanolophia canadaria Guenée. April, May, July, August.

Aethaloptera intextata Walker. April, June.

Ectropis crepuscularia Denis & Schiffermüller. April, May, June, July, August. Most abundant in April, May, and June.

Epimecis virginaria Cramer. May, June, July, August.

Lycia cognataria Guenée. May, June, July, August.

Nacophora quernaria Smith & Abbot. May, June, July.

Phigalia olivacearia Morrison. March.

Phigalia titea Cramer. March, April.

Erannis tiliaria Harris. October, November.

Cingilia catenaria Drury. September, October.

Anagoga pulveraria Linnaeus. May.

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Therina endropiaria Grote & Robinson. May, June.
Therina fervidaria Hübner. September, October.
Metrocampa praegrandaria Guenée. June, August.
Eugonobapta nivosaria Guenée. May, June.
Ennomos subsignarius Hübner. July, August.
Ennomos magnarius Guenée. September, October, November.
Xanthotype crocataria Fabricius. May, June, July, August.
Plagodis serinaria Herrich-Schaeffer. June.
Plagodis fervidaria Herrich-Schaeffer. July, August.
Plagodis alcoolaria Guenée. May.
Hyperitis amicaria Herrich-Schaeffer. May, June.
Ania limbata Haworth. June, July.
Gonodontis hypochraria Herrich-Schaeffer. May, June, July.
Gonodontis duaria Guenée. May, June.
Gonodontis obfirmaria Hübner. May.
Euchlaena serrata Drury. June.
Euchlaena obtusaria Hübner. June.
Euchlaena johnsonaria Fitch. (C. P. Benedict.)
Euchlaena amoenaria Guenée. June.
Metanema inatomaria Guenée. May (O. Fulda).
Metanema textrinaria Grote & Robinson. May.
Priocycla armantaria Herrich-Schaeffer. June.
Priocycla decoloraria Hulst. (C. L. Pollard.)
Pero honestarius Walker. May, June, August.
Pero marmoratus Grossbeck. July, August.
Syssaura infensata Guenée. July, September.
Caberodes confusaria Hübner. June, July, September.
Caberodes majoraria Guenée. June.
Tetracis crocallata Guenée. May, June, July, August.
Sabulodes arcasaria Walker. May, July, August. *S. sulphurata* Packard is the female of this species.
Sabulodes lorata Grote. May, June.
Sabulodes transversata Drury. July, August, September.
Abbotana clemataria Smith & Abbot. May, June, July.
Brephos infans Möschler. March, April.

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Family NOLIDAE

Celama triquetrana Fitch. May, June, August.
Nola ovilla Grote. April, August.
Roeselia minuscula Zeller. June.

Family LACOSOMIDAE

Lacosoma chiridota Grote. (O. Fulda.)

Family PSYCHIDAE

Thyridopteryx ephemeraeformis Haworth. September.
Eurycyttarus confederata Grote & Robinson. June.

Family COCHLIDIIDAE

Sibine stimulea Clemens. June, July.
Euclea delphinii querceti Herrich-Schaeffer. June, July.
Euclea indetermina Boisduval. June.
Euclea chloris Herrich-Schaeffer. July.
Adoneta spinuloides Herrich-Schaeffer. July.
Sisyrosea textula Herrich-Schaeffer. The caterpillar has been collected on the island.
Phobetron pithecium Smith & Abbot. June.
Isochaetes beutenmülleri Hy. Edwards. The caterpillars were found by Mr. Louis H. Joutel on a swamp oak near Richmond, August 30, 1901, and later I reared therefrom several of the mature insects, which emerged the following year.
Prolimacodes scapha Harris. July.
Cochlidion biguttata Packard. June.
Cochlidion y-inversa Packard. (O. Fulda.)
Lithacodes fasciola Herrich-Schaeffer. June, July.
Tortricidia testacea Packard. May, June.
Tortricidea pallida Herrich-Schaeffer. The larva has been found on the island.

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Family MEGALOPYGIDAE

Lagoa crispata Packard. June, July.

Family PYROMORPHIDAE

Pyromorpha dimidiata Herrich-Schaeffer. June.

Harrisina americana Guérin-Méneville. June, July, August.

Family THYRIDAE

Thyris lugubris Boisduval. June, July.

Family COSSIDAE

Zeuzera pyrina Linnaeus. June, July. The first specimen of the imported and destructive leopard moth was found under a partly decayed white maple on Fort Hill, June 23, 1888. See Proc. Nat. Sci. Assoc. Staten Island 3: 35. 18 Mr 1893.

Prionoxystus robiniae Peck. June, July.

Prionoxystus querciperda Fitch. Collected at Four Corners by Jacob Doll and George Franck.

Family SESIIDAE

Melittia satyriniformis Hübner. June, July, August, September.

Memythrus simulans Grote. Larvae in swamp oak (George P. Engelhardt).

Memythrus asilipennis Boisduval. May 24 (George P. Engelhardt).

Bembecia marginata Harris. September.

Sanninoidea exitiosa Say. June, July, August.

Sesia bassiformis Walker. August.

Sesia tipuliformis Clerck. June.

Sesia pictipes Grote & Robinson. June, July.

Sesia acerni Clemens. May, June, July.

Sesia corni Hy. Edwards. June.

Sesia pyri Harris. July.

Sesia pyralidiformis Walker. August.

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Notes on Specimens Recently Collected in the Serpentine Area of Staten Island[1]

ARTHUR HOLLICK

The so-called serpentine or soapstone area of Staten Island, represented most prominently by the range of hills extending from the shore at New Brighton to the Fresh Kills marshes, near the center of the island at Richmond, has been so frequently discussed at our meetings that brief reference only is necessary to some of the features with which these notes are concerned.

The eastern and southern borders of the area are well defined by steep slopes, which in places are almost perpendicular escarpments of bare rock, such as may be seen on the eastern side of Pavilion Hill at Tompkinsville and on the eastern side of Grymes Hill at Stapleton. For the most part, however, the outcrops are hidden and their outlines modified either by talus accumulations or by glacial drift. Only a limited portion of the area, in the southern flanks of Todt Hill, lies south of the terminal moraine. Toward the north and west the surface is an irregular slope to tide water and the exact limits of the boundary between can only be inferred. The rock is covered with glacial and recent surface deposits, except in certain stream beds, such as in the Clove Valley below Martling's Pond, Logan's Spring brook in the Sailor's Snug Harbor grounds, etc. Elsewhere, however, it has been exposed in sewer, street, and other excavations, and its presence near by, in other places, is indicated by fragmentary surface material. On theoretical grounds the northwest boundary is assumed to be approximately parallel with and close to the eastern edge of the trap ridge, which extends from Port Richmond to Linoleumville.

The object of these notes is to describe certain rock specimens

[1] Presented October 16, 1909.

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and minerals recently collected, and to discuss their characters and the conditions under which they were found. I am indebted to Dr. Charles P. Berkey, of Columbia University, for the preparation of their sections for microscopic examination, and to Dr. Alexis A. Julien, of the same institution, for their critical examination and the determination of their specific characters.

The rock is traversed by a system of jointing which simulates more or less closely the features of dip and strike in sedimentary rocks. In fact deductions based upon these features alone would justify the opinion expressed by earlier investigators that the rock might represent a metamorphosed series of sediments. This jointing is best seen in the vicinity of Richmond, near the Latourette farm, and may be observed in many of the bowlders scattered over the morainal region to the south, some of which, when broken and reduced to hand specimens, might well be mistaken for shale or schist.

Over the unglaciated area on Todt Hill and on the tops of the hills at New Brighton and Tompkinsville, where glacial erosion was limited, the rock is weathered into a soft, yellowish, fractured condition, to which the name "soapstone" is generally applied. In the vicinity of Richmond, where glaciation was more pronounced, the upper, weathered zone was eroded and the rock now exposed at the surface is hard and dense in texture and dark green in color.

One of the finest series of rock specimens and characteristic minerals thus far obtained from the Staten Island serpentine area was recently collected during the progress of excavating the trench for the retaining wall along the east side of Jay Street at St. George. A projecting spur of the serpentine escarpment was cut away for a distance of some seventy-five feet, almost down to tide level, exposing a vertical face twenty feet in height and affording a view of the rock at a lower level than had been previously visible anywhere on the island. The serpentine rock was very dark green in color, hard, and much seamed and fractured. the fractures often filled with talc, marmolite, magnesite, calcite.

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and aragonite. Associated with the serpentine and apparently indicating the location of a fault line or shear zone, was a vertical series of very hard amphibolite or antholite schists, identical with the rock struck at a depth of 200 feet in a well boring at Bischoff's brewery, Stapleton, also on the eastern edge of the escarpment. What is apparently a continuation of this series may also be seen outcropping on the surface along the eastern side of Pavilion Hill, where in one place it is an almost black hornblende rock. Another shear plane was occupied by a band of chlorite schist and talc, which attracted considerable attention on account of its conspicuous coloring and also because it caused the contractor more or less trouble by slipping.

The great variation in the color and texture of the rock from place to place throughout the area might seem to preclude the probability that it was all derived from one source; but the field observations, taken in conjunction with the determination of the mineral constituents by microscopic examination, indicate conclusively that it all had a common origin and that this was a basic igneous rock.

The fact that the most extensive fracturing and shearing of the rock, accompanied by the greatest variety in the rock and its associated minerals, occurs along the face of the steep eastern escarpment is significant. It evidently represents a zone of disturbance and at once suggests a fault as the cause of the escarpment, and the accompanying shearing and slipping as the controlling factor in the evolution of most of the minerals that are found along the shear planes. All the phases of the antholite schist may be seen, sometimes in a single hand specimen, from the hard massive or crystalline form to that which is flattened or foliated or lengthened out into fibrous asbestos. Heretofore we have always called this latter mineral "fibrous serpentine," a name that must now be abandoned.

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Notes on the White-breasted Nuthatch[1]

WILLIAM T. DAVIS

Last summer Mr. Isaac Wort, of Woodrow, Staten Island, showed Mr. Howard H. Cleaves and me a small sour gum having a hole in the trunk about 30 ft. from the ground, where a pair of white-breasted nuthatches, *Sitta carolinensis* Lath., had their nest earlier in the season. This is the first record of the bird breeding on our island.

We have seen a white-breasted nuthatch in the Clove Valley on the tenth of August, but most of the records are from September 1 to the end of March. We have found the bird in the wooded portions of Bronx Park, N. Y. City, on June 19, and it is commonly considered a permanent resident in this vicinity.

Alexander Wilson says that the nuthatches have received the name from their "supposed practice of breaking nuts by repeated hatchings, or hammerings with their bills," but he adds that he has never seen them so engaged, and concludes that if they do open soft-shelled nuts, they are after the larvae that so often breed therein. However, that they are fond of the kernels of nuts has been attested many times since the days of Wilson.

On a cold day late in November several years ago, I noticed a white-breasted nuthatch picking at a nut that it had laid on a large fungus growth up in a tree, using the fungus as a table. I stopped to watch it, and the nuthatch also stopped to look at me. After going on with its work, it again regarded me for a short time, then went into a hole, and presently reappeared with a nut. This it placed beside the other one. It would pick at these nuts, or would run up the tree a little way, and then back as if for exercise, but always returning to the nuts. I had watched it for a long time, when coming around to the hole again,

[1] Presented October 16, 1909.

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the bird regarded me very attentively, being evidently afraid to go in while I was so close. After several starts, it finally disappeared and in due time brought out another nut. Later I examined these hickory nuts and found that they had been opened by a squirrel, one of them still having some of the kernel left in it, showing the marks of the nuthatch's bill.

Every rambler afield in winter time has come across little flocks of birds of several species, assembled for apparently no other purpose than pure sociability. They cannot talk one another's language, perhaps, but they nevertheless keep company and enjoy the association.

I remember three brown-creepers and a single white-breasted nuthatch that were thus keeping company. As long as the creepers were near, the nuthatch was busy running up and down the tree trunks, but when they flew away it called very often as if it wished for their return. This note is a *yank-yank,* or as Wilson says a *quank, quank.* Thoreau writes "I hear a fine busy twitter, and looking up, see a nuthatch hopping along and about a swamp white oak branch inspecting every side of it, as readily hanging head downwards as standing upright, and then it utters a distinct *quah* as if to attrack a companion. Indeed, that other finer twitter seemed designed to keep some companion in tow, or else it was like a very busy man talking to himself. The companion was a single chickadee, which lisped six or eight feet off." Thoreau also heard the song of the white-breasted nuthatch, which he likened to "*To-what what what what what,* rapidly repeated, and not the usual *quah quah.*"

I have also heard the nuthatch singing on the island in the latter days of March, but at the time likened it to its usual note repeated very rapidly.

The allied red-breasted nuthatch has been seen on the island on several occasions, and on the eighteenth of February, several years ago, I came at sunset to an old dogwood in which I noticed a hole. I got up the tree a little way, when a red-breasted nuthatch stuck its head out, but quickly retreated. Shortly it

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came out again and flew to a tree near by and went to picking at the bark. Though I had disturbed it in its slumbers, yet it was not much frightened, and went quietly to work picking the bark as if it had left its retreat calmly without first having had two fingers thrust in the little doorway to keep it from flying out.

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The Disputed Claim of the Proprietors of East Jersey to Staten Island

EDWARD C. DELAVAN, JR.

There is no better way of interpreting ancient words, or of construing ancient grants, deeds and charters, than by usage; and the uniform course of modern authorities fully establishes the rule, that, however general the words of an ancient grant may be, it is to be construed by evidence of the manner in which the thing granted has always been possessed and used; for so the parties thereto must be supposed to have intended. Contemporanea Expositio est optima et fortissima in Lege.[1]

The grant by Charles II to his brother James, Duke of York and Albany, on March 12, 1664, of a vast tract in the New World was followed in the following year by the conveyance by the latter to John, Lord Berkeley, and Sir George Carteret, of the territory later known as New Jersey, and described as

"all that tract of land adjacent to New England and lying and being to the westward of Long Island and Manhitas Island, and bounded on the east, part by the main sea and part by Hudson's river, and having upon the west Delaware bay or river, and extending southward to the main ocean as far as Cape May at the mouth of Delaware bay and to the northward as far as the northermost branch of the said bay or river of Delaware which is in forty-one degrees and forty minutes of latitude and crossing over thence in a straight line to Hudson's river in forty-one degrees of latitude."[2]

The complicated history of the New Jersey grants has been so clearly treated in the third volume of the Narrative and Critical History of America, at pages 421 *et sequitur*, that it will be necessary to refer to them only incidentally here.

[1] Brooms Legal Maxims, 8th Am. ed., 682. 4 American and English Encyclopedia of Law, 2d ed., 796.

[2] 1 New Jersey Archives, first series, 8, 10.

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Had the descriptions of these grants stopped with the words "to the westward of Long Island and Manhitas Island" Staten Island would seem clearly to have been included, but the addition thereto of the words "and bounded on the east, part by the main sea and part by Hudson's river," introduced a latent ambiguity. What was Hudson's river?

Capt. Philip Carteret came over as the first governor of East New Jersey and took possession of that territory. It does not appear that he then attempted to take possession of Staten Island.

Governor Nicolls had made several grants of land in New Jersey after the grant to Berkeley and Carteret, but before he had notice that it had been made; these grants were promptly repudiated by the Duke of York.[8] But Governor Nicolls during the same period had made grants of land on Staten Island; these were not repudiated by the Duke of York; on the contrary, some of them were later confirmed. The Duke and his successors thereafter remained in uninterrupted possession of Staten Island and resisted all adverse claims thereto. The matter became the subject of official correspondence, which will be briefly recited.

The first dispute over the title to Staten Island seems to have arisen when Governor Carteret of New Jersey attempted to cut hay thereon, a proceeding which led Governor Lovelace of New York to address to him a letter of the following tenor:—

"Sr

"I received yor Lettr by ye hands of Mr. *Jones;* ye Contents were a narrative of what had past between one of yor Magisstrates & my Marshall; I must confess I have heard something of that Story though imperfectly; neither did I give too much Credit to his Relation, finding him to bee too much transported, wch I can attribute to noe other reason, then what he averrs, his hard Treatmt; Tis true, I employed him to forewarne all persons (that had not that common Civility to them to desire Liberty of mee) to cutt & carry away Hay from *Staten Island* without my Appro-

[8] 1 N. J. Arch., 1st series, 17, 46, 97.

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baçon; but it seems Mr. *Hopkins* (whether in contempt or Derision) prᵒmis'd to make an Essay, whither the Propriety belonged to his Royall Highness, or yᵉ Lord Proprietorᵉˢ, & as my Servant averrs, when that was yᵉ Dispute, he was soe confident as to decide it their's (for that was the Terme) And upon that Conclusion perhaps us'd him more rigourously than some undecent Reply of my Servant might meritt. Sʳ I hope there will not bee an Occasion of a Controversy of the Title of that Place after 5 years possession, together with a lawfull Purchase of the Natives, & not the least Contradiction from yᵉ Lord Proprietors; but if any pragmatick Person, out of any Officiousness or sinister Ends of his own shall intermeddle in that Affayre, I shall assure him to maintain my Royall Masters Interest to that place, to the utmost of my Ability; Mr. *Jones* brought another Letter, but finding the Superscription to be Mr. *Hopkins* his Hand, with whom I never had any Correspondence (neither desire I any) I refused the Acceptaçon. I have noe more at present, but that I am

Yoʳ humble Servant

N. Y. 18 Sep: 1672 FR. LOVELACE"[4]

Sir John Werden, the secretary of the Duke of York, later wrote as follows to Governor Andros:

1675. Feby 13. ". . . P.S. I had allmost forgott to tell you yᵗ we have as yet done nothing towards yᵉ adjusting Sir George Carteretts pretensions in New Jersey, where I presume you will take care to keep all things in yᵉ same posture (as to yᵉ Dukes prerogatives & proffitts) as they were in your predecessors time untill you shall hear of some alteracôns agreed to here."[5]

Again Sir John Werden wrote to Governor Andros:

1681, May 12. ". . . As for yᵉ Islands in Delaware river, it is best to observe well the grants, as I take Mr. Pen's is bounded by the shores of Delaware river, on yᵉ East, by which Islands

[4] 13 Col. Doc., 466. (Documents relating to the Colonial History of the State of New York.)

[5] 3 Col. Doc., 229. See 13 Col. Doc., 508.

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seeme excluded out of his patent, if they lye out in y^e^ open river, and may still belong to New Castle, and soe alsoe for those y^t^ the Quakers of New Jersey may pretend to; but in both these cases the graunts alone must determine y^e^ matter, w^ch^ you may be well advised upon, for here they are not, neither can we judge soe well as our lawyers. . . ."[6]

LETTER FROM GOVERNOR CARTERET AND COUNCIL TO THE GOVERNOR OF NEW YORK AND HIS COUNCIL, REFERRING TO THE OWNERSHIP OF STATEN ISLAND

(From "East Jersey Records," Vol. II, Liber 3, p. 171.)

By the Hon^ble^ Phillip Carteret Esq^r^. Governor of the Province of East New Jersey under the Right Hon^ble^, the Lady Elizabeth Carteret Sole Executrix to the Right Hon^ble^, Sir George Carteret Kn^t^. & Bar^t^. Deceased Late Lord Proprietor of this Province and his Councell

To the Hon^ble^, the Governor or Commander in Chief of all his R: Highness Territories in America at New York and his Councell there.

WHEREAS I have an order to Lay Claime to Staten Island as properly and Justly belonging to the Lord Proprietor his Government and Jurisdiction of this Province and doth Appeare by his R: Highness Grant under his hand and Seale bearing date the 10^th^ day of 7temb. 1680. WHEREFORE these are in the Lord Proprietors Name and by Virtue of the said Grant to demand of you the Surrender of the s^d^ Island unto me with the Quiet possession thereof, and that your Selfues or any other persone by your Authority doe forbeare the Expressing eny Command Authority or Jurisdiction within the said Island in which I doe Expect your Speedy answer & Compliance—

Given under my hand and Seale the 22^d^ July 1681.

[6] 3 Col. Doc., 286.

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PROCLAMATION OF GOVERNOR CARTERET TO THE INHABITANTS OF STATEN ISLAND

(From "East Jersey Records," Vol. II, Liber 3, p. 171–2.)

By the Hon^ble^ Phillip Carteret Esq^r^ Governor of the Province of East New Jersey under the Right Hon^ble^ The Lady Elizabeth Carteret Sole Executrix to the Right Hon^ble^, Sir George Carteret Kn^t^. & Bar^t^. Deceased Late Lord Proprietor of this Province.

WHEREAS Staten Island doth of right belong to the Province of East New Jersey as doth appeare of his R. Highness the Duke of York Deed of Grant under his hand & Seale bearing date the 10^th^ of 7temb. 1680. but hath been detained by several of the Governors under his R. Highness, Contrary to all Law & Equity and having now a Speciall order from the Lord Proprietor to demand the same These are in his Majesty's Name to will and require you the Magistrates Officers and Inhabitants of the said Island to forbear Yielding any Obedience to the Government or Jurisdiction of New York, or to doe or Act anything by their Authority or Command and receive your Commissions Orders and Instructions from me your Lawfull Governor as you will answer the Contrary at your P'rills.

Given under my hand and Seale the 22 July An^o^. Dom'. 1681.

PH. CARTERET.

(Seal)

CAPTAIN ANTHONY BROCKHOLLS, OF NEW YORK, TO GOVERNOR CARTERET

(From "Grants and Concessions," p. 686.)

New York, July, 26th, 1681.

Capt. CARTERET.

I This Day received several Papers from you by Mr. BULLEN, and LAPRERY, which have been shewn and read in Council, but find no Power thereby for you to Act in, or assume the Government of NEW-JERSEY, and till you pursuant to our former Orders and Resolves in Council, and your Parole to me, produce and

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shew a sufficient Authority you are and I do hereby require you to desist Acting in any publick Capacity, and remain,

Your Friend and Servant,
ANTHONY BROCKHOLLS.[1]

GOVERNOR CARTERET TO CAPTAIN BROCKHOLLS

(From "Grants and Concessions," p. 687.)

Elizabeth-Town 28th July, 1681

Capt. BROCKHOLLS,

Sir, I have received yours of the 26th Instant, by Mr. BULLEN, and Mr. LAPRERY. I have a Power sufficient to Act as Governor of EAST NEW-JERSEY, and am no more bound to give you and your Council an Account thereof, then you are obliged to give me an Account of yours: When you do produce to me by what legal Authority you are so confident to controul my Proceedings, I will shew you mine to contradict it. In the mean Time I will send your uncivil Answer for ENGLAND, where your late Governor and his Councils unjust Proceedings, are already disowned by your Master, and condemned to be illegal by all in General. I did send you a Copy of his Royal Highness Grant attested by the Secretary of this Province, of which you seem to take no Notice of, nor of my demand of the Surrender of Staten-Island, unto me, by which I conclude a denial, I remain

Your Friend and Servant,
PH. CARTERET.

GOVERNOR CARTERET TO LADY ELIZABETH CARTERET

(From "Grants and Concessions," p. 687.)

Madam,

YOUR HONOUR will see by the inclosed Letter of Capt. BROCKHOLLS, Commander in Chief of NEW-YORK Government, under

[1] Anthony Brockholls was left by Governor Andros in charge of the Government of New York, on leaving for England, in January 1681. Ed.

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his Royal Highness, the Answer to mine and the Councils demand of STATEN-ISLAND, which is as much your Honour's due as any other Part of this Province, with my reply unto it, by which your Honour will understand the continuance of their Obstinacy and unjust Proceedings, which if not taken off by his Royal Highness and punished in Sir EDMUND ANDROSS, now you have him in ENGLAND, we shall never be at quiet. The last Week the Council and General Deputies of the Assembly did meet for the Settlement of the Country, at which Time they all unanimously voted and concluded, that Sir EDMUND ANDROSS, and Abettors Proceedings against this Government was illegal; some other small Things was done, which your Honour shall have account in due Time; and so adjourned to the Month of OCTOBER next. The Ship is just a going to set Sail, and have not Time to add more, than that

I am Madam
Your most humble and faithful Servant
PH. CARTERET.[8]

(July 30th, 1681.)

A LETTER FROM CAPT. BROCKHOLLS TO S^r JOHN WERDEN ON THE CLAIM TO NEW JERSEY

New Yorke July the 30^th 1681.

Hono^ble S^r.

Since mine of the 25^th the Inclosed Demand of *Staten Island* hath Come to my hands with a Coppy of the Dukes Grant but the Original not having been shewn here and Recorded as I Judge they ought and hath been formerly Practiced Doe take Little notice thereof nor give any Perticuler answer to the Demand the within Mençoned Capt. *Phillip Carterett* not haveing Produced and Shewne any Sufficient power to make the Same or act as Governo^r. But have in answer thereto Commanded him to Desist Acting in and Assumeing the Government Till Such Authority

[8] 1 New Jersey Archives, 1st series, 349. 13 Col. Doc., 551.

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Shall be Produced and Shewne and am Resolved not to parte with *Staten Island* without Perticuler Direccons therein from his Roy[ll] Highnesse, It being soe Materially Necessary for this Governm[t] and never in their Possession who I thinke Incroach much on his Roy'll High[s] Kindnesse to Clayme the Same I thought ffitt to Advise you there of that Suitable Ord[s] may be Given accordingly and am

Hono[ble] S[r]

Your Affectionate ffriend and humble Servant

A. B.

In the following year Acting-Governor Brockholst of New York gave to Governor Carteret of New Jersey permission to cut meadow hay on Staten Island until further notice.[9]

We now find the following letter from Sir John Werden to Governor Dongan:

1684, Nov. 1. ". . . Staten Island w[th]out doubt belongs to y[e] Duke for if Sir George Carterett had had right to it, that would have beene long since determined, and those who broach such fancyes as may disturbe the quiett of possessions in y[t] Island are certainely very injurious to y[e] Duke, and we think have no colour for such pretences. . . ." [10]

Governor Dongan accordingly wrote to the Earl of Perth, who had acquired an interest as one of the proprietors of East Jersey a letter from which the following is an extract:

1685, Feby 13. ". . . Your agents have dispersed printed papers to y[e] disturbance of y[e] inhabitants of Staten Island. It hath been in poss[r]ion of his R[ll] High[ss] above twenty years (except y[e] little time y[e] Dutch had it) purchased be Governor Lovlace from y[e] Indyans in y[e] time of S[r] George Carteret, without any pr[e]tences 'till y[r] agents made claime to it, it is peopled with above two Hundred ffamilyes. . . ." [11]

[9] 13 Col. Doc., 563.
[10] 3 Col. Doc., 352.
[11] 3 Col. Doc., 354.

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At about the same time Governor Dongan wrote to Sir John Werden as follows:

1685, Feby. 18. ". . . I think it would doe well if you please to look into the last patent of East Jersey to see whether shipping bee obliged if they come into Sandy Hook to make entry at New York, the Quakers making continual pretences to Staten Island disturbs the people, more than 200 familyes are settled on it. And in case His Royal Highness cannot retrieve East Jersey, it will doe well to secure Hudson's River and take away all claim to Staten Island. . . ." [12]

In 1704, Peter Sonmans and William Dockwra, who had acquired interests as proprietors of East Jersey, petitioned Queen Anne for the surrender of Staten Island to them and their associates, which petition was referred to a committee and seems since to have rested peacefully in some obscure pigeon hole or pipe roll in the office which was once of the Lords Commissioners of Trade and Plantations.

TO THE QUEENS MOST EXCELLENT MAJESTY

The Petition of Peter Sonmans and William Dockwra for themselves and the rest of y^e^. Proprietors of the Eastern Division of the Province of Nova Caesarea or New Jersey in America. Sheweth

That his late Ma^ty^. King Charles the Second by his Letters Patent bearing date the 29^th^, of June in the 26^th^ Year of His Reign, for the Considerations therein mentioned did Grant and Confirm unto James Earl of Perth, S^r^. George Meckenz, Rob^t^. Berkley Argent (Arent) Sonmans, W^m^. Dockwra and others their Heirs and assigns for ever that part of the aforesaid Lands which then was and ever since till very lately has been called by the named of East Jersey Extending Eastward and Northward all along the Sea Coast, and Hudsons River from little Egg Harbour

[12] 3 Col. Doc., 356.

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to that part of Hudsons River which is in 41 Degrees of North Latitude and otherways bounded and limitted as in the said Grant and Confirmation as expressed with all Islands, Bays, Rivers &c^{a}. to the same belonging or in anywise appertaining within which said boundary lyes an Island called Staten Island.

That Your Ma^{ty}^{s}. Governor of New Yorke pretends in right and for the use of Your Ma^{ty}. to Claime the said Island and keeps Possession thereof, and tho. Your Pet^{rs}. by Councell Learned in the Law are advised they have an undoubted Right to the said Island, yet out of their great duty and Deference to your Ma^{ty}. doe restrain themselves from taking any other method for Recovery thereof than by humble Representation of their Case for your Ma^{ty}^{s}. most Gracious Pleasure and Direction therein, to which your Pet^{rs}. shall most Readily and Intirely Submitt.

Your Pet^{rs}. therefore most humbly pray That Your Ma^{ty}. will be Graciously pleased to give such Orders and Directions for the hearing and finall determining of this matter as your Ma^{ty}. in your great Justice and wisdome shall think fitt.

And Yo^{r}. Pet^{rs}. (as in duty bound) shall ever pray &c^{a}.

PETER SONMANS
WM: DOCKWRA

AN ORDER OF COUNCIL, REFERRING TO THE LORDS OF TRADE A PETITION FROM PETER SONMANS AND WM. DOCKWRA, ABOUT THE TITLE TO STATEN ISLAND

(From P. R. P. B. T. New Jersey, Vol. 1 A, 18.)

An Order of Council of the 6th. Ins^{t}. referring to this Board y^{e}. Petition of Peter Sonmans & W^{m}. Dockwra &c relating to their Title to the Island of Staten in New Jersey &c Recd July 10th. 1704.

At the Court at S^{t}. James's the 6th. day of July 1704.

L. S.

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Present,

THE QUEENS MOST EXCELLENT MA^TY. IN COUNCILL.

Upon reading this day at the Board the Petition of Peter Sonmans and William Dockwra for themselves and the rest of the Proprietors of the Eastern Division of the Province of Nova Caesaria or New Jersey in America, relating to the Island of Staten, which the Governor of New Yorke pretends to, in Right and for the use of Her Ma^ty. and keeps Possession thereof, and praying that Directions be given for the hearing and finaly Determining of that matter. It is ordered by Her Ma^ty. in Councill That it be, as it is hereby Referred to the Lords Comm^rs. of Trade and Plantations to Examine the matter of the said Petition, a Copy whereof is hereunto annexed, and upon hearing the Pet^rs. and others concerned, to Report to this Board, what they conceive fitt for Her Ma^ty. to do thereupon.

JOHN POVEY.[13]

That the circumnavigation of Staten Island by Christopher Billop or any one else had any bearing upon the settlement of this disputed title is highly improbable. It presented questions to be settled by courts rather than by sailing craft; and it seems odd, that dispute having arisen, the Duke of York should have been willing to surrender a large Island, but desirous of retaining a small one, as the result of a twenty-four hour sailing test.

The first grant of land on Staten Island to Billop bears date 25 March, 1676, and was confirmed by patent dated 6 May, 1687. The first was a mere grant of land. The second created the Manor of Bentley. Christopher Billop was in July, 1674, commissioned by Governor Andros, second lieutenant of a company of foot; (3 Col. Doc. 221); in August, 1676, he desired to give up his commission (id. 239); from August 14th, 1677 to 10 March 1679 he was commander and subcollector at Delaware Bay; on the latter date he was dismissed in disgrace. (12 Col. Doc. 580,

[13] 3 N. J. Arch., 1st ser., 61.

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581, 584, 593, 594, 595, 599, 607, 613, 3 Col. Doc. 276.) He was still angry with Governor Andros in 1680 (3 Col. Doc. 284), and in 1684 desired to sell his plantation (id. 350) on Staten Island, opposite Perth Amboy (id. 356). In December, 1685, after James had ascended the throne, Billop appealed to the King from a judgment of the Mayors Court of the City of New York (id. 365, 366.) The Manor of Bentley was created, as we have seen, in 1687.

NOTE.—Since the foregoing article was written the attention of the writer has been called to a book entitled A History of Thomas and Anne Billopp Farmar, and Some of Their Descendants in America, by Charles Farmar Billopp, a copy of which may be found in the New York Public Library.

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Records of Meetings

Regular Meeting, October 16, 1909

The meeting was held in the museum, Borough Hall, New Brighton First Vice-President William T. Davis in the chair.

About thirty persons were present.

The minutes of the annual meeting of May 15, 1909, were read and approved.

Dr. Arthur Hollick presented the following

Report of the Committee

on the

Annual Prize Competition in Natural Science

open only to

Pupils in Curtis High School

The subject of competition for the school year 1908–1909 was "a collection of the leaves and flowers or fruit of not less than twenty-five native and introduced Staten Island trees, with a written discussion of their respective availabilities for shade, ornamental or memorial purposes."

Two collections were submitted in competition, but only one of them fulfilled all the requirements of the conditions imposed. This one, submitted by Carl Philip Dowell, contained sixty mounted specimens, and seventeen specimens of fruits in boxes, collectively representing forty species, all of them correctly named.

The accompanying written discussion also complied with the conditions imposed.

The prize was, therefore, awarded to Carl Philip Dowell.

The other collection, submitted by Thomas Nicholson, was commended for the care and neatness shown in the preparation of the specimens.

The committee recommends that the prize specimens be displayed in the museum of the Association, and that the written discussion be printed where it may receive the attention which it deserves and be made available for suitable distribution.

The subject and conditions determined upon for the school year 1909–1910 are:

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Subject

A collection of not less than fifty Staten Island insects of economic importance, including not less than twenty-five species. (By "insects of economic importance" is meant such as are injurious or beneficial to cultivated plants or to man.)

Conditions

1. The specimens shall be neatly mounted and placed in boxes or cases.
2. Each specimen shall be labeled with the scientific name, the common name if any, the date of collection, and the locality where collected.
3. Accompanying the collection shall be a brief statement of the special economic interest attaching to each specimen.
4. The collection shall be made between July 1, 1909, and June 1, 1910, and shall be turned over to the principal of Curtis High School, complete in all details, on or before June 15, 1910.

HARRY F. TOWLE,
CHARLES L. POLLARD,
ARTHUR HOLLICK,
Committee.

Mr. Samuel McK. Smith, for the committee on concerts and lectures, announced the following tentative program for the season of 1909:

Friday, November 5—The Olive Mead Quartette.
Monday, November 22—Readings by Mrs. Bertha Kunz Baker.
Friday, December 10—Concert by Mr. and Mrs. David Mannes.

The secretary announced the deaths, since the annual meeting, of the Association, of the following members:

Edward Benjamin Arnold,	elected	1907.
Lester Williams Clark, Jr.,	"	1897.
David Hamilton Gildersleeve,	"	1907.
Algernon Knox Johnston,	"	1893.
David Fremont Simonson,	"	1906.

Dr. Arthur Hollick referred to the congested condition of the museum and library and the necessity for making provision for larger quarters and more extensive equipment as soon as possible, and offered the following resolutions:

Resolved: that the president be requested to appoint a committee on legislation, to consider and report to the Board of Trustees what amendment or amendments to the charter of the Association may be necessary in order to enable the City to erect a suitable building for the museum and library of the Association and to provide for its care and maintenance.

Resolved: that the Board of Trustees be requested to take such further action as may be necessary, looking to the drafting of a bill, securing its approval by the City, introducing it in the State Legislature, and endeavoring to secure its enactment, provided such action is deemed advisable.

The resolutions were unanimously adopted.

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SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited specimens and read a paper on Notes on Specimens Recently Collected in the Serpentine Area of Staten Island. (Printed in full in this issue, p. 31.)

Mr. William T. Davis read a paper on Notes on the White-breasted Nuthatch. (Printed in full in this issue, p. 34.)

Mr. Edward C. Delavan, Jr., read a paper on the early settlers of Staten Island.

Dr. Arthur Hollick exhibited a collection of Staten Island soils, sands, silts, and clays, prepared for museum display in sealed glass jars so that they may be handled like other geological and mineralogical specimens.

Mr. Charles P. Benedict exhibited the inflorescence of a wild carrot, *Daucus carota* L., with all of the florets purple.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 20, 1909

The meeting was held in the museum, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About forty persons were present.

The minutes of the meeting of October 16, 1909, were read and approved.

The president announced that he had appointed Hon. William Allaire Shortt and Dr. Arthur Hollick a committee on legislation, in accordance with the resolutions adopted at the October meeting of the Association.

SCIENTIFIC PROGRAM

The president announced that the program for the evening was in charge of the Section of Biology, and resigned the chair to Mr. Charles L. Pollard, chairman of the Section.

Mr. Pollard stated that the program had been arranged to commemorate the one hundredth anniversary of the birth of Charles Darwin and the fiftieth anniversary of the publication of the scientist's Origin of Species, and outlined the principal factors concerned in the theory of evolution.

Dr. Frank E. Lutz, Assistant Curator of Invertebrate Zoölogy in the American Museum of Natural History, delivered an address, illustrated with diagrams and apparatus, on Recent Studies in Evolution.

Dr. Wiliam D. Matthew, Assistant Curator of Vertebrate Paleontology in the American Museum of Natural History, delivered an address, illustrated by lantern slides, on The Development of Species as Illustrated in the Evolution of the Horse.

On motion, a vote of thanks was unanimously tendered Dr. Lutz and Dr. Matthew for their courtesy in preparing and delivering their addresses; and Mr. Charles A. Ingalls for the use and operation of his stereopticon in illustrating Dr. Matthew's address.

The meeting then adjourned.

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REGULAR MEETING, DECEMBER 18, 1909

The meeting was held in the museum, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About thirty-five persons were present.

On motion, the reading of the minutes of the meeting of November 20, 1909, was dispensed with.

SCIENTIFIC PROGRAM

The president announced that the program for the evening was in charge of the Section of Art, and resigned the chair to Dr. John Q. Adams, chairman of the Section.

Dr. Adams introduced the speaker of the evening, Mr. Lewis F. Pilcher, Professor of Fine Arts in Vassar College, who delivered an address, illustrated by lantern slides, on Doric Architecture as Applied to the Sub-Treasury Building at Broad and Nassau Streets, New York City.

On motion a vote of thanks was tendered Mr. Pilcher for his courtesy in delivering the lecture; and Mr. Charles A. Ingalls for the use and operation of his stereopticon in illustrating the lecture.

The meeting then adjourned.

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Proceedings of the Section of Biology

Special Meeting, October 20, 1909

The meeting was held in the museum. The Section decided to take charge of the November meeting of the Association and furnish the entire program for that meeting, the chairman and the recorder being authorized to secure speakers for the meeting as a Darwin memorial.

Mr. Howard H. Cleaves reported having seen the nest of a blue-winged warbler near Huguenot, Staten Island, in May 1909. He reported also the breeding of the killdeer on Staten Island, as evidenced by the fact that he had found the mother bird with its young near Pleasant Plains.

Mr. William T. Davis showed and commented on some rare insects from Helmetta and Jamesburg, New Jersey, among which were *Orchelimum pulchellum* Davis and *Cicada sayi* Grossbeck, the latter accompanied by a stick showing hole made by the ovipositor of the insect.

November 20, 1909

The regular meeting of the Association on November 20, 1909, was held in the museum under the auspices of the Section, the president of the Association, Hon. Howard R. Bayne, presiding. The scientific program was a Darwin memorial, commemorating both the one hundredth anniversary of Charles Darwin's birth and the fiftieth anniversary of the publication of his most important work, The Origin of Species. An account of the meeting will be found in the minutes of the Association. The program follows:

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Introductory Address

Mr. Charles L. Pollard, Chairman of Section of Biology.

Recent Studies in Evolution

Dr. Frank E. Lutz, Assistant Curator of Invertebrate Zoology in the American Museum Natural History.

The Development of Species, as Illustrated in the Evolution of the Horse

Dr. W. D. Matthew, Assistant Curator of Vertebrate Paleontology in the American Museum of Natural History.

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Publications of the Association

1. Proceedings of the Natural Science Association of Staten Island

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. Proceedings of the Staten Island Association of Arts and Sciences

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents, and Index, contains:

Part I, June–December, 1905, pp. 1–20, issued April 10, 1906.

Part II, January–May, 1906, pp. 21–69, issued July 9, 1906.

Part III, October–December, 1906, pp. 71–92, issued April 17, 1907.

Part IV, January–May, 1907, pp. 93–136, issued September 20, 1907.

Volume II, with Title Page, Table of Contents, and Index, contains:

Part I, October 1907–January 1908, pp. 1–46, issued October 17, 1908.

Part II, February–May, 1908, pp. 47–124, issued September 30, 1909.

Part III, July 1908–February 1909, pp. 125–177, issued August 18, 1910.

Part IV, March–May, 1909, pp. 179–251, issued September 16, 1910.

Volume III, Part I, October–December, 1909, pp. 1–54, issued April 28, 1911.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i–xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i–xxxvii, 1907), will be sent free on application.

3. The Museum Bulletin

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Current numbers sent free on application. Back numbers 2 cents each.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

Staten Island Association of Arts and Sciences,

New Brighton, N. Y.

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MUSEUM STAFF

Curator-in-chief
Charles Louis Pollard, M.A.

Museum Assistant
Miss Agnes L. Pollard

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William Thompson Davis, *Honorary Curator*
James Chapin, *Honorary Assistant*

DEPARTMENT OF BOTANY
Philip Dowell, M.A., Ph.D., *Honorary Curator*

DEPARTMENT OF GEOLOGY, MINERALOGY, AND PALEONTOLOGY
Arthur Hollick, Ph.D., *Honorary Curator*

DEPARTMENT OF ANTHROPOLOGY AND ARCHEOLOGY
Alanson Skinner, *Honorary Assistant*

DEPARTMENT OF ARTS AND ANTIQUITIES
John Quincy Adams, Ph.D., *Honorary Curator*

DEPARTMENT OF BOOKS
In charge of the Museum Assistant

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VOL. III January–May, 1910 Part II

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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[Issued May 2, 1911]

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LANCASTER, PA.

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THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

VOL. III JANUARY–MAY, 1910 PART II

Two Seasons' Photographic Work with Sandpipers at Wolfe's Pond[1]

HOWARD H. CLEAVES

Needless to say, the spotted sandpipers are the only ones that remain to nest on Staten Island. During June, 1908, one of their nests was found at Prince's Bay. The site selected by the birds was near the edge of a tidewater creek which runs in a winding manner through a salt meadow. It was here that my first sandpiper photographs were taken.

The year before the finding of this nest, the meadows had been ditched by the Health Department in its campaign against mosquitoes. The effect on the meadows was marked. Barren spots appeared where water had stood before, and scattered over these places were innumerable blocks of peatlike turf, which had been thrown aside by the ditch diggers. Mother sandpiper, after being flushed from the nest, would sometimes fly to another part of the meadow. Soon, however, she could be seen cautiously threading her way back, and not infrequently she would, for the purpose of observation, run to the top of one of the above mentioned pieces of earth. The camera was now brought into play. All of the

[1] Presented February 19, 1910.

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sandpiper's observation towers were removed, except one, and this was placed in a tempting position. The camera was concealed in some grasses, and was completely buried under drift material and small sods. A thread had been attached to spring the shutter, and, after causing the bird to leave the nest, I retired to a distance of thirty yards, took the thread in my hand and waited. Much to my satisfaction the sandpiper, in working her way back toward the nest, ran nimbly across an open place and made straight for the hummock in front of the camera. In another second her light breast appeared at the top of the clod, and the thread was pulled with much vigor. Although this incident occurred a quarter of a mile from Wolfe's Pond (the scene of all of the other sandpiper pictures), it serves as a fitting introduction to this paper.

Wolfe's Pond is perhaps the most peculiarly located body of fresh water on Staten Island. Along one portion of it a mere neck of land, less than fifty yards across at the narrowest point, separates it from the salt water of the ocean. An outlet at one end forms a creek which flows finally into Raritan Bay, but almost every spring there comes a storm that swells the pond until it overflows its banks and rushes out by the shortest route to join forces with the sea. At the other end, something less than half a mile away, the pond extends far up into a woodland where it receives water from a brook for a part of the year. On the easterly side a grassy pasture slope extends up from the shore of the pond, and on the westerly there are farm lands, a small pasture, and the barnyard of a dairy.

The first experiment with the sandpipers took place along the easterly shore. The camera (an old fashioned Blair, and the only one I possessed at that time) was placed on the ground near the water's edge and focused on some point to which a sandpiper was expected to come. Then it was covered with weeds and tufts of grass, and made to look as inconspicuous as possible. A thread was stretched some distance up the shore and everything was in readiness for the sandpiper. It was generally not long

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before a bird was sighted somewhere along the water line, whereupon the photographer would gradually work him in the direction of the camera. If the bird finally arrived at the desired point in front of the spot, the thread was pulled and some result was assured. But not infrequently the sandpiper would fly before he was even near the camera, in which case it was necessary to retire until another bird arrived, when operations were started anew. Again, although the bird might pass in front of the concealed camera, it often occurred that he waded too far out or passed too close to be in the field of focus. On one or two occasions birds have actually gone up to the blind and caught insects that were on it, and many times they have run about behind the camera instead of in front.

One day a least sandpiper arrived at the pond. All attention was at once turned to him, and after about an hour's work he was photographed.

It was at about this time that the attractiveness of the barnyard on the other side of the pond was discovered; that is, its attractiveness for birds, if not for man. The soft muddy ooze under foot contained numberless larvae, for which some of the sandpipers probed with much dexterity. Insects were present in large quantities all over the surface of the ground, and were sought principally by the spotted sandpipers. There were several kinds of shore birds to be found here, however, and with one or two exceptions they all stuck pretty closely to the barnyard. There was one hard problem to be overcome. It was found that the area away from the shore was so attractive to the birds that they no longer followed the usual custom of feeding along the water line; and the water line was practically the only place where it was possible to photograph.

During August, when the migration was at its height, it was surprising to note the number of cripples and otherwise defective birds that came to the pond. One spotted sandpiper, when first seen, was flying in big circles out over the water. When he lit and was approached he ran a short distance up the shore, then

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stopped and turned his left side to me, and again ran on up the shore. It was discovered that he was blind in the right eye. This bird bathed at short intervals by wading out up to his belly and splashing the water with his wings. Then he would stand on the shore preening his feathers for some time, and when all dry would go in for another bath. One day a flock of seven semipalmated sandpipers arrived at the cove in the barnyard, and one was lame. A solitary sandpiper that arrived on the scene limped perceptibly, but was nevertheless very wild, and would be off on the wing one moment and back on the shore the next. Then there was a poor least sandpiper that had been terribly wounded. One leg was drawn up painfully and remained always in that position. His tail had evidently been struck by a stray shot, for several of the feathers hung down out of place. Now and then he engaged in a little feeding, but for the greater part of the time he stood about in shallow water as if meditating. He was a pitiable object to behold, and no doubt perished before the migration southward had gone far, for in the bird world life is one great struggle for the survival of the fittest.

One day while I was working on the eastern side of the pond a semipalmated or ringneck plover wheeled in from the outer beach and lit on the same sandbar with the camera. At the time I was some distance from the end of the thread that connected with the camera, but hastened to reach it as quickly as possible. The bird ran a few steps and stopped at the exact point upon which the camera had been focused. However, before the thread could be reached, he had moved out of position, and a few seconds later took wing and was off again to the outside beach. This opportunity has never been repeated.

All sorts of exasperating experiences and conditions were constantly occurring. When work was being done on the eastern shore, people passed not infrequently, and generally happened along just as a half hour's work was about to be brought to a successful conclusion. Or perhaps just at the critical moment a cloud would drift across the sun and hopelessly darken things.

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A shaggy-haired dog had the habit of swimming about the pond in pursuit of a small sailboat. He one day came to shore near the camera, got mixed up in the thread, set off the shutter and spoiled a plate. A Frenchman who passed at a certain time almost every Sunday morning became extremely interested in my work. He would stand at my side and keenly follow the movements of the sandpiper on the shore. If the bird started to run in the wrong direction or showed an inclination to fly, an exclamation of disappointment would escape from the foreigner. But if the bird finally chanced to tarry for a moment at the desired point, and the thread was pulled at the proper instant, the Frenchman would gesticulate wildly and express his approval. Once he was so excited after an exposure had been made that his feet became entangled in the thread and the shutter was sprung twice on the same plate. That night, when the plates were developed, it was found that the one spoiled by the Frenchman would have been one of the choicest of the lot.

One afternoon, while working with a semipalmated sandpiper, I became so absorbed in what I was doing that it was not observed that 150 cows were rushing into the barnyard back of me. Suddenly, however, the sandpiper flew apparently for no reason. Then there was a clatter of hoofs behind me, and it was by the narrowest margin that the camera was rescued from the stampede.

In the early spring of the present year the purchase of a *Graflex* camera revolutionized the possibilities in bird photography. It came at the beginning of the busy season, and a list of undertakings from barred owls to long-billed marsh wrens was mapped out. But the hazy month of August, with its sandpiper joys, was not forgotten. A thread, shutter-release attachment was made for the new camera, a special blind for it (to use along the shore) was constructed, and by late July everything was in readiness.

The blind proved to be a great success, and it was pressed into service on every possible occasion. On week days after business,

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on Saturday afternoons, and on Sundays I haunted the shores of Wolfe's Pond. The result was that by the middle of August a passable series of spotted sandpiper photographs had been secured, and it was planned to devote the remainder of the season to the migrants from the north. A week's vacation, from August 16 to 23, had been secured, and most of it was to have been spent in the barnyard. But alas, for the first three days of that week, it will be recalled, there occurred the heaviest rainfall for the month of August that this section has known for many years. The pond was flooded, its water line was completely changed, and its banks were in such a wretched condition that photography was out of the question for many days. The storm seemed to have had its effect on the migration as well; at all events sandpipers were painfully scarce, and only one semipalmated was seen during the entire season. This individual, for some reason, objected to passing in front of the blind, and the best that could be done in his case was to stalk him with the camera held in the hand. Three plates were secured in this manner, but the image of the bird in each case was small and unsatisfactory.

One of the hired men in the dairy had for some time manifested a considerable interest in my operations, and when I arrived at the barnyard on Sunday mornings he would tell whether any birds had been present during the week. Once he said that a flock of "siven of thim yung ones" had been there for a whole day but he had not seen them since.

One day in early September I had the pleasure of taking Mr. Clinton G. Abbott to the barnyard, and one spotted and two solitary sandpipers were kind enough to appear on the scene. The spotted walked obligingly into place in front of each of our cameras once, but after that he positively refused to be photographed. A certain section of the cow yard back from the shore held out strong inducements to him, and after trying at least a dozen times to get him to return to the water line (and to our cameras) we gave him up.

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The two solitary sandpipers were wary creatures, springing into the air and making short flights, running about nervously, and wading out belly-deep in the water and keeping one in constant fear that they might at any moment be gone for all time. In fact one of them did disappear entirely, and the one that remained seemed all the more wary. However, after many provoking disappointments several exposures were finally secured.

The pond was not visited again until October 10. It was not expected that any sign of life would be present in the barnyard at this late date but on scanning the shore of the cove I detected a sandpiper. He was preening himself, and as I approached a little closer I could see that this was a new species to me. I did not have my camera blind with me, but did the best I could to photograph him with the camera held in my hand. As many as possible of his characteristics were noted, and his photograph and description were sent to Mr. Waldron DeWitt Miller of the American Museum. Mr. Miller was kind enough to tell me that the bird was undoubtedly either a white-rumped or a pectoral sandpiper, and that it was probably a pectoral, because my description said that the white patch on the rump was divided by a dark stripe.

The last shore bird episode for the present season did not find its setting at Wolfe's Pond, but on the wild, outside beach of Crooke's Point, several miles up the shore. Mr. William T. Davis, Mr. Alanson Skinner, and I had spent a pleasant day on the point. During the return trip along the beach, in the late afternoon, two sanderlings, or surf snipe, were seen feeding along the sandy stretch ahead of us. We at first thought that the birds were of a wild nature, but as we approached they did not fly, and finally we were observing them from a distance of only a few feet. Their tameness was almost unbelievable. The lens of the camera was split up so as to give one magnification, and in one or two instances it was necessary to back away from the birds to bring them into the field of focus. They were photographed until the plate supply was exhausted, and then my only regret was that I did not have more plates.

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Notes on Introduced Plants Collected near Arlington, Staten Island[1]

ARTHUR HOLLICK

Land that has for its foundation a natural area of salt marsh, with an artificial superstructure composed of garbage, street sweepings, ballast from vessels, refuse from freight cars, and cinders from engines and manufacturing establishments, with a maze of railroad tracks gridironing the surface, is not apt to appeal to the casual observer as a locality that may be studied with either pleasure or profit, and is more than likely to be avoided. Such a locality lies just beyond Arlington station on the North Shore Division of the Rapid Transit Railroad, and at certain seasons of the year it may be sensed by the nose before it is fully revealed to the eyes. Nevertheless it is a region replete with interest to the botanist and, to a certain extent, to the student of social economy. The botanist will find there many interesting introduced plants, and he who is interested in social economics may note and discuss the exigencies of civilization which brought them there and the effects that may result from their introduction.

Probably all except a very few of the plants now growing there were introduced as seeds in the refuse that had been used for filling in the salt marsh. Some species exist only for a single season and then disappear, but others become established as permanent and often undesirable citizens, pressing hard upon and frequently spreading into and crowding out the adjacent native vegetation; and it is a significant fact that nearly all of our most troublesome weeds have come to us in this way.

Those derived from the garbage deposits include the potato, tomato, pea, bean, pumpkin, muskmelon, watermelon, gourd, turnip, grape, apple, orange, etc., and are not fitted to persist, either

[1] Presented April 16, 1910.

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by reason of the climatic conditions or the unfavorable environment. They served their original economic uses as food products, and such of them as are represented in a further struggle for existence during a single season are of interest mainly as indicating the vegetable resources that were utilized by the community as part of its food supply.

The plants of greatest botanical interest are those which originated from seeds brought in the ballast of vessels from foreign ports, or in fodder and packing material in freight trains from the south and west. Many of these become naturalized, and remain as permanent additions to our flora.

At our April meeting last year I exhibited and gave memoranda on certain of the grasses and sedges collected at this locality and I am now able to show some of the higher plants found associated with them. Many of the species are common in waste places elsewhere and do not call for special reference or discussion; others, however, are not only new to our local flora but have not heretofore been reported from the eastern United States. For this reason some difficulty was experienced in correctly identifying them and a few yet remain undetermined.

Following is a list of those which were collected as most characteristic of the locality in the autumn. The species new to our local flora are designated by an asterisk.

Commelina nudiflora L.*

Tropical America, Asia and Africa.

Chenopodium anthelminticum L.*

Europe. Common in waste ground.

Chenopodium vulvaria L.*

Europe.

Atriplex patula L.

Europe. Common in waste ground.

Amaranthus spinosus L.*

Tropical America.

Amaranthus graecizans L.

Tropical America and western United States. Common in waste ground.

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Amaranthus deflexus L.*
Tropical America.
Lepidium medium Greene.*
Southwestern United States.
Sinapis alba L.*
Europe. Common in waste ground.
Brassica arvensis (L.) B.S.P.
Europe. Common in waste ground.
Brassica campestris L.
Europe. Common in waste ground.
Diplotaxis muralis (L.) DC.
Old world.
Raphanus raphanistrum L.
Europe. Common in waste ground.
Roripa palustris (L.) Bess.
Europe. Common in waste and low ground.
Camelina sativa (L.) Crantz.
Europe. Common in waste ground.
Koniga maritima (L.) R. Br. Sweet alyssum.
Cultivated.
Cleome spinosa L.*
Tropical America.
Cleome pentaphylla L.* [*Pedicellaria pentaphylla* (L.) Schrank.]
Tropical America.
Sesban macrocarpa Muhl.*
Southern and western United States.
Phaseolus vulgaris L.* Kidney bean.
Cultivated.
Ricinus communis L.* Castor oil bean.
Cultivated.
Euphorbia pilulifera L.*
Southern United States and West Indies.
Heliotropium europaeum L.
Europe. Common in waste ground.
Physalis pubescens L.
Pennsylvania and southward.

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Solanum nigrum L.
Common everywhere.
Sesamum indicum L.*
Asia and Africa.
Lagenaria lagenaria (L.) Cockrl.* Club gourd.
Cultivated.
Cucurbita pepo L.* Pumpkin.
Cultivated.
Cucumis melo L.* Muskmelon.
Cultivated.
Citrullus citrullus (L.) Karst.* Watermelon.
Cultivated.
Helianthus annuus L. Sunflower.
Cultivated.

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An Addition to the List of Staten Island Frogs[1]

WILLIAM T. DAVIS

Between the railroad station at Annadale and Seguine's Pond, there are several marshy places and one little artificial pond. For several years we have heard in these lowlands, from the middle of March to the first week in May, the song of what we considered to be the swamp tree frog, *Chorophilus triseriatus* (Wied.). Mr. James Chapin first called attention to the frogs, and several efforts were made to secure specimens, but owing to the small number of individuals and the unfavorable character of the days at our disposal, which were either too windy or too cold, we were unsuccessful.

On the twenty-ninth of last March, a warm and quiet day, I visited Annadale with the hope of finding the frogs. While I was at a distance several were heard in the little pond, and after much waiting one sang again. The day was so quiet that the surface of the grassy pond could be minutely examined with a glass, and it was not long before the yellowish colored air sack at the throat of the frog could be seen as it dilated or subsided with his song. It was an easy matter to wade with almost imperceptible progress toward the little frog and finally to capture him with a sudden stroke of the net. There were at least five males in the pond, and two were collected, the others being left to keep alive the colony.

When all is quiet these little frogs raise themselves considerably above the water and expand their air sacks and sing. If slightly disturbed they often withdraw, leaving only their eyes and nose above water. A trifle more disturbance and they retire completely.

They keep the air sack distended often for fifteen or twenty

[1] Presented April 16, 1910.

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minutes whether they are singing or not, but if you approach them, they let out all of the air and it collapses. This they do previous to diving out of danger among the water plants.

Several years ago I put one of these frogs under a glass shade, where there were a Pickering's frog and a cricket frog. It acted quite differently from these species, which generally keep themselves out in view and are active and desirous of catching flies. On the other hand *Chorophilus* hid himself away beneath a bunch of sumach berries lying near the water, and from the day he was put under the shade until he was bottled, about a week in all, I do not think he ever left his retreat. One of the Annadale specimens, which was kept alive for about two weeks, was fond of secreting himself between a stone and the side of the aquarium or otherwise hiding himself away.

In New Jersey I have either seen or heard *Chorophilus triseriatus* at the following localities: Newfoundland, May 8; Little Falls, March 12; Plainfield, May 6; Jamesburg, April 4, and Lakehurst in April.

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Do Not Burn the Woods[1]

WILLIAM T. DAVIS

Nearly all of the unoccupied land on Staten Island, whether woodland or meadow, has of late been burned over annually. State Forest Commissioner Whipple, in an address before the Staten Island Association of Arts and Sciences delivered several years ago, commented upon the fact, and was surprised that the residents of the island tolerated such a wasteful practice. Very few of the fires are accidental, but are usually started by ignorant or malicious persons.

Under the heading Wasteful to Burn Grass, a writer in a late issue of *The New York Times* has this to say: "The wastefulness of burning grass is perhaps not generally realized. By the burning of dead grass we remove the material which is to furnish humus and bacteria essential for plant growth. Resulting from this burning we have temporarily a small amount of ash which stimulates a quick and unhealthy growth of grass, but the soluble parts of the ash are rapidly washed away by rains, so that we have not only a great loss from destruction of humus and bacteria but also a loss of part of the small valuable residue. Land subjected to grass fire must therefore quickly 'run out' unless manure is added subsequently to take the place of the burned grass, and this is not commonly done."

Fire in the woodland results in even greater destruction, and the bushes and young trees, and often the older ones as well, are either killed outright or severely damaged. There cannot be a fire without a loss, and by burning his woods or his meadow a man simply parts with a considerable amount of his property in smoke and gases.

In an article on the cost of living, contributed to The Inde-

[1] Presented April 16, 1910.

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pendent for March 31, 1910, Prof. Seligman shows very conclusively that the adjustment between wages and commodities will right itself as it has in the past, and that the real cause for concern is the "lessening of the powers of man over nature, and the failure of the same exertion to yield corresponding results." He mentions the prodigal waste of natural resources and the butchery of our soil, and there is no greater butcher of woodland and meadow than the destroyer fire.

Within the past few years several barns and many fences have been consumed on our island by these wasteful woodland fires, and since 1864 over forty kinds of wild plants have been exterminated; that is to say, we have lost on an average one species of plant every year. At present this destruction is going on faster than in the past, and many other kinds of plants are nearly exterminated. The ground where these plants once grew is not used for any purpose; it has simply been burned over and over again until the plants have been killed.

What would be thought of the result if the northern and more wooded part of Central Park, Manhattan, were burned over, annually destroying many of the small trees, bushes, and dry leaves, and making the place a blackened ruin? How much less attractive the park would be. Rightly enough great precautions are taken to prevent this in the parks, and what is good for the parks is also good for our island.

We take it that many of the families who reside on Staten Island and have homes in the country, have located with a view to enjoying the natural surroundings, and will be most regretful when these are a thing of the past. They will tell you that they admire the wild flowers and are interested in the birds, but the conditions that are being unnecessarily rushed upon us by a few ignorant persons are fast destroying these things.

It has always paid from a real estate point of view to have the beauties of nature near at hand, as to witness the value of property near to parks, and such real estate ventures as Laurence Park at Bronxville.

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While Staten Island originally possessed natural scenery surpassing most of the places within a few miles of the City Hall, it has not managed its birth right very well, and now we have annually the misfortune to go walking on charcoal when we would go afield. What is the use of the Department of Education of the City of New York having lecturers discourse on The Beauties of Nature when the beauties themselves are deliberately destroyed?

This article has been prepared with the hope that those who read it will do what they can to preserve our island from the destroyer, and that the teachers in the schools will mention the matter to the children and request their coöperation in preserving the wild flowers and the trees; ask them not to set fire to the woods, as it makes us all poorer and the island less beautiful and interesting.

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The Redwing Changes Its Nesting Site[1]

HOWARD H. CLEAVES

One of the very commonest of our common birds is the redwing blackbird. Go to almost any marsh, stream, or pond from early March to the end of the nesting season and you will see this black fellow with the crimson shoulder patches, perched at the top of some tree and giving forth his liquid "Kon-ker-ee" song. The females do not arrive from the south until several weeks after the males, and if it were not for the frolicsome dashes that the latter perform in making love to their brown-striped mates, you might not suspect that the two birds were in any way related.

The nesting place of the redwing, as I have intimated, is near water of some kind, on the edge of a pond in a tussock of grass, in a shrub on the bank of a creek, or attached to grasses in a marsh or swamp. But a radical change has been made in the nesting habits of the redwing in a certain locality at Prince's Bay. During June, 1909, while photographing bobolinks in an upland meadow at that place, I came upon the nest of a redwing, which contained two eggs and which was supported by a cluster of daisy stems. The nest was four or five inches from the ground and resembled in general the nests that are characteristic of the salt meadows, although the nearest salt marsh was distant over a quarter of a mile. Later in the day, in the same field, a second nest was discovered, this one containing four eggs. There were certainly more nests in the vicinity, for there were as many as four females hovering above my head at one time.

So it would seem that the redwing has permanently established himself in this strange environment, which is so peculiarly foreign to his usual habitat. Naturally we seek an explanation, but a satisfactory conclusion is not easily arrived at. One fact, how-

[1] Presented before the Section of Biology, April 9, 1910.

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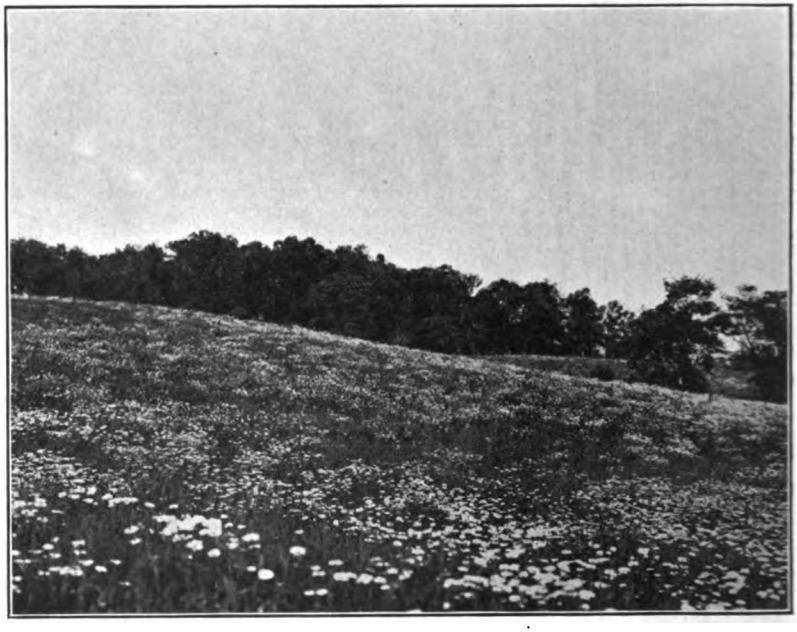
ever, that may or may not suggest a plausible theory is that a few years ago the Health Department caused to be drained the salt meadows that had formerly been the natural nesting grounds of the redwings. The ditching of these places and the resulting dryness of sections that had previously been covered by several inches of water, made it possible for crows to alight and walk



Daisy field where redwings nest.

where they pleased on the marshes; and on not a few occasions I have found redwings' nests with linings disheveled and eggs gone. In a few instances the footprints of the marauders could be seen in impressionable mud near by.

It would seem, then, that although the redwing returns each year to the same general locality, he is gradually adopting an entirely different environment in that locality for his nesting site.

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Literature Relating to Staten Island

Anthropological Papers of the American Museum of Natural History. Vol. III[1]

The first 62 pages of this volume, with five text figures, twelve plates, and map of Indian village sites, are devoted to a consideration of the Lenapé Indians of Staten Island by Alanson Skinner. The author considers the subject under the heads of Archaeological sites, Collections of Specimens, Description of Specimens, History and Ethnography of Staten Island, Cultural Reconstruction, Resumé, and Bibliography. According to Mr. Skinner the Indians found on the island upon the arrival of the first white settlers belonged to the Unami division of the Lenni Lenapé or Delaware Indians. The local band known as the Hackensacks occupied the north shore, and the Raritans the southern end of the island. The evidence of this division is found in the implements discovered on the village sites of the two areas mentioned.

In the introduction to the volume, which contains eight other articles on the Indians of Greater New York, the editor points out that the work on Staten Island is more advanced than that of Manhattan and the adjacent shores. He further states: "This Island presents somewhat unique conditions in that it constitutes a definite geographical unit of convenient size but without effective barriers to intrusion; that its archaeological remains seem to have belonged to one and the same culture, that of the historic Indians; and in that it appears to have been uninhabited during remote times."

W. T. D.

[1] Hudson-Fulton Publication. The Indians of Greater New York and the Lower Hudson. Edited by Clark Wissler. 1909.

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THE BIRDS OF NEW JERSEY[1]

As Staten Island is geographically a part of New Jersey, this report should be of considerable use to our local naturalists. Most of the plates have been reproduced from the works of Wilson and Audubon, and the aim in the text "has been to present keys and descriptions that will enable any one to identify birds that he may see, to give a brief sketch of the more characteristic habits of the common species, and at the same time to include such facts and records on the distribution of all species as will make the report a thoroughly up-to-date list of the birds of the State." An extensive bibliography of New Jersey ornithology is also given.

W. T. D.

DOWELL'S VIOLETS OF STATEN ISLAND[1]

In this paper we have, for the first time, the results of a study of our local species of violets from the standpoint of modern methods of scientific investigation, in consequence of which our list of recognized species is considerably extended and a number of new hybrid forms are added. Of the latter only those were admitted which were kept under observation through at least one season, and the author states that a number of others, of doubtful identity, might have been included. The number of recognized species is twenty-two, and the number of hybrids thirty, of which latter ten are here described as new, eight of them being figured. Each figure shows the entire plant, and they are exceptionally good in regard to details, especially as regards the rootstocks and the form and nervation of the leaves.

It is of interest to note the significant remark of the author that "It is not surprising . . . to find so many hybrids, when we consider the fact that the trees are being cut down in the wood-

[1] Witmer Stone. Report of the New Jersey State Museum, pp. 11–347. *plate 84.* 1908.

[1] The Violets of Staten Island. Philip Dowell. Bull. Torrey Club 37: 163–179. *pls. 11–18.* 29 Ap 1910.

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lands and the natural surroundings of the plants continually disturbed. It seems that under the changed conditions they hybridize more freely. In this connection it is interesting to note that while it is difficult to find typical *V. hirsutula* [a woodland form], several of its hybrids have been found growing in its immediate vicinity."

This paper demonstrates what may be accomplished by painstaking, intensive work, and it should serve as a stimulus to encourage similar work on other groups of plants.

A. H.

ANNUAL REPORT OF THE BOARD OF EDUCATION OF THE CITY OF NEW YORK[1]

This is a folio volume, containing, in addition to statistical tables of expenditures and resources for public school education, a series of photographs which include pictures of the buildings and diagrams of the sites of every public school in all five of the boroughs. Staten Island's thirty-five elementary and one high school are illustrated and described on pages 200–233. The brief facts recorded in regard to locations, method by which the sites were acquired, dates of acquisition of the sites and erection of the buildings, cost of the sites and of the buildings, etc., are interesting, and the pictures will be of great historic interest to future generations. It is to be regretted that we have not a similar series showing the old district schools, which the present buildings replaced, such ones for example as those at Bogardus' Corners, Richmond Valley, and Green Ridge.

A. H.

[1] Annual | Financial and Statistical Report | of the | Transactions | of the | Board of Education of the City of New York | for the Fiscal and Calendar Years | 1906–1907–1908 | . Egerton L. Winthrop, Jr., President | John Greene, Vice-President | Henry R. M. Cook, Auditor | John Greene, Chairman | Lewis Haase | Hugo Kanzler | Ralph McKee | Rupert B. Thomas | Committee on Finance | New York, 1909.

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GRATACAP'S GEOLOGY OF THE CITY OF NEW YORK[1]

This is an elaboration of the author's two previous works on the same subject, issued, respectively, in 1901 and 1904, and two separate papers, entitled, respectively, Evidences of Glacial Action in and around Greater New York, published in New York Teachers' Monographs 1:92–107. 1898, and The Ice Age, Pop. Sci. Monthly 12:319–327. 1878. Reviews of two of these publications may be found in our PROCEEDINGS for Oct. 15, 1904, and Oct. 8, 1898, under Literature Relating to Staten Island.

In a work which contains so much that is interesting and valuable it is not a pleasant task to begin a review with what may appear to be a mere criticism of the author's peculiarities of style; but it is impossible to ignore certain features of terminology and nomenclature in the Introduction which must necessarily be confusing to the mind of the average reader, who can not be expected to be well versed in such matters.

For example, the author says "Geologic Time has been separated by American geologists into a number of subordinate time groups. . . . The chart of geologic time, *prepared and recognized by American geologists, follows* (the italics are the reviewer's).

An analysis of this so called chart shows such an extraordinary mixture of terminology that it is difficult to imagine who the geologists were that prepared it and what geologists would recognize it. The primary divisions of the pre-Mesozoic and post-Mesozoic time groups are designated "eras" (Laurentian Era, Upper Silurian Era, Tertiary Era, etc.), but the coördinate divisions of Mesozoic Time are called "periods" (Triassic Period, Cretaceous Period, etc.); and this peculiar inconsistency is further exemplified by the subdivision of the Upper Silurian "Era" into the Niagara, Onondaga, and Lower Helderberg "Periods"! It would be interesting to learn how any similar coördinate sub-

[1] Geology | of the | City of New York | with numerous illustrations and maps | by | L. P. Gratacap, A.M. | American Museum of Natural History | Third Edition, Enlarged | New York | Henry Holt and Company | 1909 | . 8°°, cloth, x + 232 pp., with 65 figures and 4 maps.

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divisions of the Triassic Period would be designated by the author; but we may perhaps assume that inasmuch as he subdivides an era into periods a period may be subdivided into eras, as they appear to be interchangeable in the code of terminology which he has adopted.

The term "epoch" is also incidentally used, in connection with the Trenton group of limestones, in a sense coördinate with that in which "period" is used in connection with the Lower Helderberg group of limestones. Thus "era," "period," and "epoch" are inextricably involved, and the loose and more or less vague application or explanation of other terms, such as "zone" and "age" add still further to the confusion.

Another inconsistency may also be noted in the mixture of new and old nomenclature in connection with names applied to the primary time group divisions. The older and more generally recognized names (Cambrian, Devonian, Cretaceous, etc.) are used throughout, with one exception, the substitution of Carbonic for Carboniferous. Under every consideration of consistency and uniformity the older name should have been used; or else Cambrian, Devonian, Cretaceous, etc., should have been replaced by Cambric, Devonic, Cretacic, etc. It may be noted, however, that the term "Carboniferous" is utilized in subdividing the Carbonic into Lower Carboniferous, Carboniferous, and Permian!

If represented in the usual conventional manner the author's expressed ideas in regard to the geologic column would appear as follows:

Cenozoic Time.	Quaternary Era. Tertiary Era.
Mesozoic Time.	Cretaceous Period. Jurassic Period. Triassic Period.

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Paleozoic Time.	Carbonic Era	Permian. Carboniferous. Lower Carboniferous.
	Devonian Era.	
	Upper Silurian Era	Lower Helderberg Period. Onondaga Period. Niagara Period.
	Lower Silurian Era	Hudson Epoch. Utica Epoch. Trenton Epoch. Chazy Epoch. Calciferous Epoch.
	Cambrian Era.	
Archaean Time.	Huronian (Algonkian) Era. Laurentian Era.	

Other peculiarities in style of diction and text arrangement are so obvious they can not fail to attract attention and will either amuse or exasperate the reader, according to his temperament or the spirit in which he is perusing the book; but these features need not be noted here. The introductory chapter may be skipped and then the remainder of the work may be read with pleasure and profit by anyone who possesses even an elementary knowledge of the principles of geology and an interest in the natural features of his environment. The chapter which will appeal with special interest to the members of our Association is the one with the caption Borough of Richmond (Staten Island), included on pages 171–186, with excellent views of the Triassic trap rock quarry at Elm Park and the Cretaceous clay and sand pits at Kreischerville. This chapter presents most of the salient facts of our local geology in a pleasing manner, in language that the layman can understand. The succeeding chapter, on Evidences of Glaciation in and about Greater New York also contains many references to the phenomena of the Ice Age on Staten Island, and a picture of "sugar-loaf rock" on Grymes Hill.

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The various articles, notes, and memoranda directly or indirectly relating to our local geology, which have appeared from time to time in our PROCEEDINGS and elsewhere, are freely utilized and cited—with due credit, and the result is a brief résumé of the features that are most likely to attract the attention and enlist the interest of the amateur scientist and casual observer. To the advanced student and scientific investigator, however, the treatment of the subjects will prove disappointing, on account of its brevity and incompleteness; but at the same time it is certain to arouse a desire to learn more about the matters touched upon and outlined. In this connection it may be pertinent to remark that the scientific value of the work would have been greatly enhanced if the author had mentioned that all of the Staten Island rocks, minerals, fossils, etc., described or referred to, could be seen and examined, not only in the field, but also by means of the collections in our museum, and that the literature cited could be found and consulted in our library.

A. H

NOTES IN CONNECTION WITH SPECIMENS RECENTLY OBTAINED FROM THE SERPENTINES OF STATEN ISLAND[1]

This is a brief description of the serpentine area of Staten Island, with references to previous investigations and theories, and descriptions of recent exposures and the minerals obtained from them.

The statement is made that "This area has been under observation for a longer period than any other local geological formation, and yet we know as little today in regard to its exact stratigraphic relations as was known when it was first studied;" and the final words of the paper are: "Any suggestions in relation to the manner in which the serpentine should be indicated, in depicting a geologic section across Staten Island, would be welcomed."

[1] Arthur Hollick, Annals New York Acad. Sci. 19: 315–317. 1909.

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The author acknowledges his indebtedness to Dr. Charles P. Berkey for the preparation of rock sections for microscopic examination, and to Dr. Alexis A. Julien for their critical study. The conclusion reached in regard to the serpentines and their associated minerals is to the effect that "numerous field observations and determinations of the mineral constituents by microscopic examination, indicate conclusively that all had a common origin and that this was a basic igneous rock such as an enstatite or a pyroxenite.

Ph. D.

RUNNING AWAY FROM FOLKS[1]

This is a breezy little sketch of some of the localities in and around New York City, to which the person with little time and money at his disposal may make brief and pleasant journeys. A trip through Staten Island is described, via the Richmond Turnpike, Howard Avenue, the Serpentine Road, and thence to Richmond, and an excellent picture is included of the view from the heights above Silver Lake, looking over the Kill von Kull to New Jersey. The writer is a little hazy in regard to his geology, however, when he describes our range of serpentine hills as "the great glacial moraine that runs down the island like a spine," and his guess was a good many miles out of the way when he mentions Richmond Hill as the terminus of the "glacial ridge." However, he says, "we left Manhattan after lunch; we are back again by dinner-time," so there was hardly time to bother very much about facts.

A. H.

WILLIAM WINTER, THE DEAN OF AMERICAN DRAMATIC CRITICS[1]

This is a biographical sketch of our talented fellow citizen and an appreciative account of his work as a dramatic critic, with

[1] Walter P. Eaton. Harper's Bazar, April 1910, illustrated with pictures by Walter K. Stone.

[1] Walter Prichard Eaton. Munsey's Magazine 42: 820–826, *with portrait.* Mr 1910.

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incidental comment upon his literary style and his status as a poet, a wit, and a satirist. The portrait is a reproduction of a photograph by Almstaedt and it could hardly be improved in any detail.

A. H.

THE STATEN ISLAND MUSEUM[1]

This paper gives an outline of the evolution of the Staten Island Association of Arts and Sciences from the original Natural Science Association of Staten Island, and a brief account of some of the principal features of the museum exhibits. Probably one of the most significant remarks in regard to the museum visitors is to the effect that those who attend most frequently are not members of the Association or their friends but are drawn from the general public.

A. H.

[1] Charles L. Pollard. Proc. Am. Assn. Museums 3: 25–29. 1909.

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Records of Meetings

Regular Meeting, January 15, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

First Vice-president William T. Davis in the chair.

About twenty-five persons were present.

The minutes of the meetings of November 20, 1909, and December 19, 1909, were read and approved.

Scientific Program

Dr. Arthur Hollick exhibited photographs taken under his direction by Mr. Howard H. Cleaves, showing the geologic section exposed in the cut made for the retaining wall on the east side of Jay Street, opposite Borough Hall, together with specimens of the serpentine rock obtained from the outcrop at the base of the cut, which is about at tide level.

The rock was found to be free from the weathering characteristic of the hill surfaces but much fractured and traversed by numerous shear planes and pressure zones and largely altered into a hard antholite schist. The section showed about six feet of serpentine at the bottom with about thirty feet of bowlder drift above.

Mr. William T. Davis gave an account of a recent visit to Yaphank, Long Island, with notes on the fauna and flora of the locality.

Of special interest was a colony of hermit thrushes, *Turdus aonalaschkae pallasii* (Cab.), which nest there, described by Mr. Davis in the Auk for October, 1909.

The presence of a European cricket, *Gryllus domesticus* L., in a farmhouse was noted.

Mr. Davis exhibited specimens of fresh water sponges; a peculiar form of *Smilax rotundifolia* L., having panduriform leaves, from the same locality; a specimen of the brook lamprey, *Ammocoetes branchialis* (L.), from Ramsey, New Jersey; also *Gordius* worms, commonly known as "horsehair snakes," parasitic in the intestinal canals of beetles and crickets.

Mr. Davis commented on the fact that he had frequently found the flowers of the yellow gerardia, *Dasystoma flava* (L.) Wood, punctured by bees in their search for honey before the blossoms had opened in the early morning.

The meeting then adjourned.

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REGULAR MEETING, FEBRUARY 19, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

In the absence of the president the meeting was called to order by First Vice-president William T. Davis.

About thirty-eight persons were present.

On motion the reading of the minutes of the meeting of January 15, 1910, was dispensed with.

President Howard R. Bayne arrived and took the chair.

The president announced that a movement had recently been started by the Bar Association of the county looking to the transfer of the supreme court from Richmond to St. George, and that the quarters now occupied by the Association of Arts and Sciences might be selected for court purposes, in which event the Association might have to vacate and seek quarters elsewhere.

Voted: that in the event of the Association being forced to vacate its present quarters in Borough Hall the Board of Trustees be requested to act in the matter so as to safeguard the interests of the Association in such manner as it might deem advisable.

The curator-in-chief called attention to the Robert P. Dow collection of butterflies, recently accessioned and now on exhibition in the museum; also to a $1000 six per cent. bond of the Confederate States of America, with all of the coupons attached, loaned for exhibition by Mr. David M. Van Name.

SCIENTIFIC PROGRAM

The program was in charge of the Section of Biology and consisted of addresses illustrated by lantern slides under the management of Mr. Charles A. Ingalls, viz.:

A Naturalist in North Carolina, by Mr. Charles L. Pollard, describing a trip to various parts of the state during parts of the months of July and August; and Two Seasons' Photographic Work with Sandpipers at Wolfe's Pond, by Mr. Howard H. Cleaves, describing the methods employed in securing snapshot photographs of the birds under various conditions (printed in full in this issue, p. 55).

The meeting then adjourned.

REGULAR MEETING, MARCH 19, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About sixty-five persons were present.

The minutes of the meetings of January 15 and February 19, 1910, were read and approved.

The president announced that the Board of Trustees had discussed the conditions confronting the Association and that he had introduced in the

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State Senate, and Mr. William Allaire Shortt in the Assembly, a bill amending the charter of the Association, and authorizing the City to condemn or lease property for the uses of the Association and to provide means for the care and maintenance of the same.

SCIENTIFIC PROGRAM

Mr. Alanson Skinner gave an address, illustrated by stereopticon slides under the management of Mr. Charles A. Ingalls, entitled By Canoe to Hudson Bay, describing a trip made under the auspices of the American Museum of Natural History for the purpose of studying the Indians of the region.

The meeting then adjourned.

REGULAR MEETING, APRIL 16, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

Eleven persons were present.

In the absence of the secretary Mr. Charles L. Pollard was elected secretary *pro tem.*

The minutes of the meeting of March 19, 1910, were read and approved.

The president announced that the bill amending the charter of the Association had passed the Senate and would probably be acted upon by the Assembly during the coming week.

Mr. William T. Davis read a communication addressed to the secretary, from Mrs. A. M. King, suggesting that the Association endeavor to assist in promoting the passage of an amendment to the Forest, Fish and Game Law of the state, now pending in the Legislature, making it unlawful to sell the plumage of protected birds whether taken within the limits of the state or not.

Mr. Davis stated that the matter had been presented before and discussed by the Section of Biology at its previous meeting and that he had been requested to recommend that the Association approve the proposed amendment.

Voted: that the Staten Island Association of Arts and Sciences heartily approves of the proposed amendment to the State game laws looking to the better protection of wild birds, and requests Senator Howard R. Bayne and Assemblyman William Allaire Shortt to make every effort to secure the passage of the same.

The president stated that he was in favor of the amendment and would do what he could to facilitate its passage by the Legislature.

Mr. Davis read the draft of a circular which he had prepared at the request of the Section of Biology, calling attention to the destruction of the woodlands of the island by fire, and urging the coöperation of citizens in an effort to protect and preserve the small remaining areas. (Printed in full in this issue, p. 68.)

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Voted: that the circular be approved and referred to the executive committee for such action as it might deem advisable in order to carry into effect the intent of the same.

The subject of tree planting on the highways of the island was discussed informally, and it was

Voted: that the president be requested to appoint a committee of three to consider and report on the subject.

The president appointed Mr. William T. Davis, Mr. Charles L. Pollard, and Mr. W. W. Bryan.

The curator-in-chief exhibited a mounted photogravure portrait of Charles Darwin, issued by the New York Academy of Sciences, and stated that he was desirous of acquiring for the museum a series of portraits of prominent scientists and artists.

SCIENTIFIC PROGRAM

The secretary *pro tem.* read a paper by Dr. Arthur Hollick, illustrated by herbarium specimens, on Notes on Some Introduced Plants Collected near Arlington, Staten Island. (Printed in full in this issue, p. 62.)

Mr. William T. Davis read a paper on An Addition to the List of Staten Island Frogs. (Printed in full in this issue, p. 66.)

Mr. Davis also exhibited three hammerstones from Teaneck and elsewhere in New Jersey, calling particular attention to one that was wedge-shaped.

Mr. Howard H. Cleaves gave an account of his experiences in photographing kingfishers, *Ceryle alcyon* (Linn.), on the island during the previous summer.

The meeting then adjourned.

ANNUAL MEETING, MAY 21, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

In the absence of the president the meeting was called to order by Second Vice-president William H. Mitchill.

Twenty-two persons were present.

The minutes of the meeting of April 16, 1910, were read and approved.

President Howard R. Bayne arrived and took the chair.

The annual report of the Board of Trustees, including reports of the standing committees and sections, was read and ordered placed on file. (See pp. 88–107 of this issue.)

The annual report of the secretary was read and ordered placed on file.

The annual report of the treasurer was read and ordered placed on file.

The president stated that the next order of business was the election of five trustees to fill the vacancies caused by the expiration of the terms of office of Samuel McKee Smith, Stafford Clarence Edwards, John De Morgan, William Armour Johnston, and Samuel Alexander Henszey, and called for the report of the committee on nominations.

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The committee submitted, as nominees, the names of Stafford Clarence Edwards, John DeMorgan, William Goodenow Willcox, John Quincy Adams, and James Richard Walsh.

The president asked if there were any other nominations and none others being made, the secretary, on motion, was instructed to cast one affirmative ballot for the nominees submitted by the committee.

The secretary cast the ballot as instructed and the president declared the nominees elected trustees of the Association for the ensuing three years.

Dr. Arthur Hollick referred to the recent death of Mr. Walter C. Kerr and submitted the following memorandum for incorporation in the minutes of the meeting:

It is with a sense of great personal loss that the Staten Island Association of Arts and Sciences records the death, on May 8, 1910, of Walter Craig Kerr, M.E., who was elected to active membership in the Natural Science Association of Staten Island on March 12, 1892, and who served it faithfully as president from 1892 to 1900. He was also a member of the first board of trustees of the Staten Island Association of Arts and Sciences, in 1905, and his subsequent interest in our welfare was evidenced on several occasions when his advice and financial assistance were sought.

Our younger members will never know and can never realize the extent of his influence, not only in the development of our present Association but also in the preservation of its predecessor from threatened dissolution at the most critical period in its history, and it is in this latter connection especially that we should remember him with gratitude.

At the time of his first election as president of the Natural Science Association the conditions were serious and the prospects discouraging. The members as well as the public had apparently lost all interest in the object and aims of the Association. Attendance at the meetings had dwindled to almost nothing. The roll of membership contained only thirty-six names, and the entire burden of administrative work, as well as of scientific activity, was borne by some three or four members. The influence of his virile personality, however, soon made itself felt. The few who had remained active were encouraged to continue, and others were inspired with new interest. The result was that when he retired from the presidency, after seven years of service, the membership had more than doubled, the meetings were well attended, and the Association held an assured position as an important factor in the intellectual life of the community.

His attainments along the lines of his life work as a successful electrical engineer we need not dwell upon. They are recognized and have been recorded elsewhere, together with the customary formal expressions and resolutions of regret and condolence by those who were more intimately associated with him socially and in business. It remains for us to merely place upon record this brief testimonial of our appreciation of what he accomplished for this Association.

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On motion the secretary was instructed to enter the memorandum in full in the minutes of the meeting.

The president then delivered his annual address.

SCIENTIFIC PROGRAM

Mr. Howard H. Cleaves gave an address on Wild Bird Photography as a Recreation, illustrated by lantern slides under the management of Mr. Charles A. Ingalls.

The meeting then adjourned.

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Annual Reports

Annual Report of the Board of Trustees

The Board of Trustees, with the coöperation of the several standing committees, the officers of the Association, and the members of the museum staff, administered the routine and other business affairs of the Association, the details of which are set forth in the appended and accompanying reports.

A change in the ex-officio membership of the Board was occasioned by the retirement of Darwin Long Bardwell from the position of District Superintendent of Schools in the Borough of Richmond, and the appointment of William Louis Ettinger to the position.

The Board held six meetings, as follows: the annual meeting on May 22, 1909; stated meetings on October 9, 1909, January 8 and April 2, 1910; and special meetings on December 16, 1909, and February 26, 1910.

At the annual meeting officers of the Association were elected as follows: president, Howard Randolph Bayne, first vice-president, William Thompson Davis, second vice-president, William Hinman Mitchill, treasurer, Charles Arthur Ingalls, secretary, Arthur Hollick.

At the stated April meeting Robert Percy Dow, B.A., was elected to patronship in the Association, in recognition of his donation of specimens to the museum collections amounting in value to more than $200.

From time to time during the year the following nominees for active membership were elected: Edward L. Andrews, Mrs. Gilbert S. Barnes, Edward W. Brown, Mrs. Charles P. Benedict, Malcolm J. Cameron, Brandish J. Carroll, Mrs. Adolph L. King, Michael H. Lucey, Pietro Maerzen, Miss Marie C. Saxer, Roland J. Türpisch, Mrs. Jere V. Wright.

The Board records with regret the loss by death of the following active members: Joseph J. Barth, Edward L. Bogert, Lester W. Clark, Jr., David H. Gildersleeve, John F. Gould, Algernon K. Johnston, Walter C. Kerr, David F. Simonson, John M. Tilley.

Cordial and satisfactory relations with the municipal authorities have been continued. Application was made to the Board of Estimate and Apportionment for an appropriation of $4000.00 for the care, maintenance, and equipment of the museum and library. The application was approved and the amount asked for was included in the city budget for the year 1910. (See item 1359, p. 13, 964, *City Record,* December 7, 1909.) This appropriation became available on January 1, 1910, and it assures the continued usefulness of the museum and library to the public, and the care and maintenance of the collections, during the current year.

During the winter an unexpected condition arose, by reason of a move-

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ment by the Bar Association of the county to have the supreme court transferred from Richmond to St. George. This movement involved the possibility that our quarters in Borough Hall might be selected for court purposes, in which event we would probably be required to vacate. In anticipation of such a contingency, and in order that the city might have the necessary legal authority to provide quarters for us elsewhere, a bill amending our charter in this respect was introduced in the State Legislature. It passed both branches, was accepted by the city, signed by the governor on May 5 and is now Chapter 208 of the Laws of 1910. The full text of the act is as follows:

AN ACT to amend chapter five hundred and twenty-six of the laws of nineteen hundred and five, entitled "An act to incorporate the Staten Island association of arts and sciences and to provide for the care and housing of its museum and library by the city of New York," in relation to the acquisition and leasing of lands and buildings for said museum, and to provide funds by the city of New York therefor.

Became a law May 5, 1910, with the approval of the Governor. Passed, three-fifths being present.

Accepted by the City.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section seven of chapter five hundred and twenty-six of the laws of nineteen hundred and five, entitled "An act to incorporate the Staten Island association of arts and sciences and to provide for the care and housing of its museum and library by the city of New York," is hereby amended to read as follows:

§ 7. The commissioners of the sinking fund of the city of New York may authorize the president of the borough of Richmond to provide such room or rooms in the borough building, in the borough of Richmond, city of New York, as may not otherwise be in use, and they may otherwise provide and set apart land in said borough for the erection of a suitable buildling or buildings thereon, for the keeping and maintaining of the museum, collection and library of the Staten Island association of arts and sciences, subject to all the conditions in section two hundred and seventeen, chapter four hundred and forty-six of the laws of nineteen hundred and one, and for the purpose of providing means for the erection of said building or buildings and for the purpose of acquiring land and a building or buildings thereon, it shall be the duty of the comptroller of the city of New York, upon being authorized thereto by the board of estimate and apportionment, to issue and sell corporate stock of the city of New York, in the manner now provided by law, sufficient for the same; and the board of estimate and apportionment may include in the annual budget for the purpose of leasing land and the building or buildings thereon and for the maintenance and care of said museum, collection and library of the Staten Island association of arts and sciences a sum suffi-

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cient therefor, and the board of trustees of the said Staten Island association of arts and sciences are empowered to enter into a contract with the proper officials of the city of New York, looking to the leasing of such rooms and building or buildings, and the care of its museum, collection and library as herein provided.

§ 2. This act shall take effect immediately.

STATE OF NEW YORK,
Office of the Secretary of State. } *ss.:*

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

SAMUEL S. KOENIG,
Secretary of State.

No change was made in the general policy of museum administration adopted last year, which was found to be as satisfactory as was possible under the circumstances and conditions controlling our present position. The museum and library was kept open to the public all day on Saturdays and during the afternoons of every other week day except Monday, which day each week was reserved for necessary work on the collections.

The specimens on display were changed from time to time in many of the cases, and on certain occasions special exhibits were installed. Especially worthy of note were the Hudson-Fulton celebration exhibit and those by the art loan committee of the Section of Art.

The Board takes advantage of this opportunity to commend the work accomplished through the medium of the sections now organized, and to urge upon the members of the Association the desirability of enrolling and joining in their activities, or of organizing new sections according as interest in special subjects may seem to warrant such action. The success attained by the Section of Art and the Section of Biology, in providing the instructive exhibits and illustrated lectures which were so thoroughly enjoyed by all, has demonstrated that this feature of the Association should be further extended so as to include all of our members who may wish to take an active part in the work of the Association. Reports of the sections will be presented this evening, from which the details of their organizations and activities may be learned.

The scheme of conducting a course of public entertainments similar to those of last year received the approval of the Board and was placed in charge of a special committee of which Mr. Samuel McK. Smith was appointed chairman. As finally arranged and carried out, the course included a concert by the Olive Mead Quartette on November 5, readings by Mrs. Bertha Kunz Baker on November 22, and a violin and piano recital by Mr. and Mrs. David Mannes on December 10. It is to be regretted that the course was not the financial success that its high class character deserved.

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The Board tenders its congratulations to the Association on the broader interest shown in its work and activities by the members in general, as evidenced in the increased attendance at the monthly meetings, in the larger number who have contributed specimens, notes, and more lengthy communications, and in the greater diversity of subjects included in both the informal programs and those arranged by the several sections.

The Association is also to be congratulated on its improved financial condition and on the practical certainty that during the coming year the debt necessarily incurred during the period of transition into a public institution will be entirely wiped out.

Respectfully submitted for the Board,

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE

The executive committee held four meetings and transacted all emergency and other *ad interim* business between the meetings of the Board.

The several items of business transacted were recorded in the minutes of the committee and were subsequently reported to and approved by the Board.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE AUDITING COMMITTEE

The committee examined the books and accounts and audited the annual and quarterly reports of the treasurer, dated respectively May 15, 1909, October 9, 1909, January 8, 1910, and April 2, 1910, to each of which we have attached our certifitace of audit.

In this connection we wish to offer a suggestion to govern the future audits, viz., that these should be made once a year and should cover the transactions embraced in the treasurer's annual report of that year, the audit (if possible) to be made before the same is presented to the Association at its annual meeting.

The present plan of auditing each quarterly statement is rather difficult for the auditors to arrange, and adds unnecessarily, we think, to the already considerable labors of the treasurer, to whose painstaking care and faithfulness to the Association's interests we are pleased to testify.

T. LIVINGSTONE KENNEDY, *Chairman,*
WINFIELD R. KOLLER.

ANNUAL REPORT OF THE PUBLICATION COMMITTEE

The Museum Bulletin, edited by the Curator-in-chief, has been issued each month, including No. 11, June 1909–No. 22, May 1910.

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Part II, Volume II, of the PROCEEDINGS (February–May, 1908, inclusive) was issued September 30, 1909.

Copy for parts III and IV (July 1908–May 1909, inclusive) has been in the hands of the printer since March 22. Previous to that time the manuscript was withheld on account of financial reasons. Hence these parts are much behind time. A communication has been transmitted to the printers urging that the matter receive immediate attention, and it is hoped that during the coming year the improved financial condition of the Association will enable us once more to bring the publication of the PROCEEDINGS up to date.

PHILIP DOWELL, *Chairman,*
WILLIAM T. DAVIS,
ARTHUR HOLLICK.

ANNUAL REPORT OF THE CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: I have the honor to submit herewith my third annual report as Curator-in-chief, for the fiscal year ending May 21, 1910.

The museum during this period has made progress in several different directions. From the experience gained by observation of the needs of our public it has been possible to strengthen and permanently establish certain activities that were undertaken experimentally in the first year of the museum's existence. Other lines of effort have been discontinued temporarily until better opportunities for their development shall be afforded. It has been our constant endeavor to keep in touch with the opinions expressed by visitors to the museum, and to formulate a policy, in relation to exhibits, that will be of the greatest benefit to the greatest number. On account of the closer familiarity with the museum gained during the year by members of the Association, the staff has frequently profited by their advice and counsel.

The acquisition of new material, both for the study and exhibition series, has continued to a gratifying degree. A large proportion of the accessions have naturally been direct gifts to the museum; but many exchanges have been made with other institutions, and some of our most valued specimens have been received in this way. Certain collections made by members of the museum staff have been important both in filling gaps in the series and in providing us with duplicates for exchange.

With the alteration in exhibits which has been necessary from time to time in order to meet social requirements or to stimulate public interest, there has been steady progress toward a proper separation of the various departments and an equable assignment of space to each. Owing to the limited space we are often obliged to feature the exhibits of one class to the exclusion of others; but an effort is constantly made to preserve a

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just balance by following one of these special displays with another of a different character.

The attendance record shows a total of 4992, as against 3597 last year. This does not include the attendance at lectures or other special events in the museum. The rate of increase over the first year in which the museum was open is especially gratifying when we reflect that a considerable proportion of our own members have not as yet visited the museum, and that a goodly portion of the community has failed to grasp the idea that there is such an institution on our island. This indicates that the growth in attendance will continue, especially after we are enabled to move into more accessible quarters.

The only change in the museum staff during the year was the appointment by the Board of Dr. John Quincy Adams as honorary curator of the department of Arts and Antiquities. The committee on exhibits of the Section of Art is continued under his supervision.

Museum Exhibits

A large portion of the summer months in 1909 were devoted to preparations for the special Hudson-Fulton exhibit, which opened with appropriate exercises on September 4 and closed on October 31. The particular features of the exhibit were described in the local press and in the Museum Bulletin for September 1909 (No. 14). It consisted of a synoptic presentation of the original resources of the island and the salient points of its history, and was greatly enhanced in interest and value by the numerous loans tendered by members and friends of the Association. The attendance during September was far in excess of that recorded in any previous month, and amply justified the time and labor required in preparing for the exhibit.

The art loan exhibits greatly surpassed those of the previous year in value and interest. In May a collection of old china, consisting principally of Lowestoft, but including various other wares, was installed. This remained throughout the summer, and was succeeded in November by a remarkable collection of old prints and engravings and by a number of modern prints and pastels by Charles F. W. Mielatz and Joseph Pennell. The facilities for displaying these pictures were not satisfactory, and the exhibit did not attract the widespread notice that it deserved. Some rare old Japanese prints were loaned at about the same time by Messrs. Bolton C. Brown and Fred L. Stoddard, through the courtesy of Mrs. J. Q. Adams. In December the china was replaced by old Sheffield silver and old cut glass, which presented an especially fine effect in the new case built after a design obtained from the Metropolitan Museum of Art. In March a large collection of old samplers, chiefly from Mr. George A. Plimpton and from the Teachers' College, likewise obtained by Mrs. Adams, was displayed for a month. The present exhibits of the Art Department include a case of Wedgwood china and a number of cases of old laces and embroideries.

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I wish to take this opportunity of expressing my great indebtedness to the ladies of the committee on exhibits of the Section of Art, who have so earnestly worked to make these loan exhibits attractive, and have assumed the entire responsibility of packing, transporting, and arranging the material. There is no doubt that such objects possess an educational value even to those who are unconscious of the fact; and they are of still greater importance in fostering the recollection of many arts and crafts that have deteriorated or fallen into disuse.

Mention should be made of the special biological exhibit commemorative of the Darwin anniversary in November, consisting of cases of insects illustrating variation, protective mimicry, protective resemblance and tautopsis. A portion of this has been continued as a permanent exhibit.

The reptiles of the Myers collection, purchased by the Association two years ago, are now being placed on view as rapidly as they can be transferred to exhibition jars. The collection of exotic butterflies has also been considerably augmented during the year. A number of new exhibits, which had been planned and for which we have material on hand, must await additional case room.

Accessions

In the Department of Zoology the most extensive contributions have been to the insect collections, chiefly as a result of the exchanges effected from time to time with my colleagues in other museums. The Dow patronship gift of exotic Lepidoptera, the North Carolina specimens collected by myself for the museum, and the Noctuidae presented by Professor John B. Smith are the most notable among this class of accessions.

Our collection of shells, already a large and valuable one, has been further increased by the gift of Mrs. Charles Townsend of a number of tropical species. Dr. Dowell has contributed some interesting local mammals and batrachians.

In the Department of Botany the general herbarium has been enriched by the gift of an extensive collection of violets from the eastern and southern United States by Professor H. D. House, while the local herbarium has received a number of Staten Island specimens, some of these representing additions to the flora.

Dr. Arthur Hollick, the honorary curator of geology, has continued his contributions of local geological material. In the Department of Anthropology the principal acquisition during the year was a collection of Indian implements from Ohio, presented by Mr. F. M. Ho-glen.

The Department of Arts and Antiquities has received among other accessions, another series of Mr. Tuttle's photographs of historic maps, including the famous Verrazano map.

The library accessions have been largely books and pamphlets received in exchange for our PROCEEDINGS, but a number of valuable state publications have been sent to us through the good offices of Senator Bayne.

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We are also receiving, as issued, the topographic maps of Staten Island, through the courtesy of Borough President Cromwell.

The following is a tabulated list of accessions:

Accessions to the Museum and Library during 1909–1910

Department of Zoology		
Insects	4039	
Shells	1463	
Other invertebrates	226	
Reptiles and batrachians	12	
Birds, nests, and eggs	50	
Miscellaneous	81	
	5871	5871
Department of Botany		1097
Department of Geology and Mineralogy		66
Department of Arts and Antiquities		37
Department of Archeology and Anthropology		75
Department of Books and Maps		192
Miscellaneous		32
Total number of specimens received		7370

Total number of accessions 92, of which 63 represent gifts, 23 exchanges, and 6 were collected especially for the museum.

Museum Staff

The curator-in-chief has been very fully occupied during the year with administrative and routine duties, mounting and caring for specimens, planning and arranging the exhibits, etc. During the summer a number of days were spent in the field collecting material in various groups, and for a period of four weeks, in July and August, under authorization from the Board, the curator-in-chief made a collecting tour in North Carolina.

The museum assistant, in addition to her clerical duties in addressing envelopes and writing letters and labels, etc., and the routine work of entering and filing periodicals and supervising the museum during public hours, has been engaged on the museum catalog, which has made excellent progress.

Mr. William T. Davis, honorary curator of zoology, prepared the cases of native insects for the special Hudson-Fulton exhibit. His assistant, Mr. James Chapin, is still in Africa, engaged in field work for the American Museum.

Dr. Philip Dowell, honorary curator in botany, made a study of the violets in the herbarium, in connection with an extensive study of the genus published in the April issue of the Bulletin of the Torrey Botanical Club.

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Dr. Arthur Hollick, honorary curator of geology, mineralogy, and paleontology, has continued his rearrangement of the mineral collection and has made some changes in the exhibition series.

Dr. J. Q. Adams, honorary curator of arts and antiquities, has not, since his recent appointment, found opportunity to reorganize the department. He has secured for the Association, however, the privilege of hearing two important lectures on art topics by speakers of wide reputation.

Mr. Alanson Skinner, honorary assistant in archeology and ethnology, has visited the museum from time to time, identifying material and giving information for the preparation of labels. He lectured before the Association at the March meeting on the subject By Canoe to Hudson Bay.

Museum Catalog

A museum catalog is an indispensable adjunct of every public museum. It bears the same relationship to the accession record as the ledger to the daybook in commercial houses, and its object is to furnish a complete list of every specimen in the possession of the Association. Our catalog conforms to the system followed in many other museums; it consists of two series, the specimen and the species catalog. In the first, differently colored cards are used to indicate the various departments, salmon color being used for zoology, green for botany, blue for geology, yellow for archeology, and buff for arts and antiquities. Each department has its own series of numbers, distinguished by a prefixed letter. Whenever a specimen is added to the collections it is given the next consecutive number in its department; and on the corresponding card is written the name of the species or description of the object, its accession number, date and locality, collector, and any further remarks that may be necessary. The highest number will therefore always indicate the total of specimens belonging to that particular class; and whenever information is desired concerning any particular specimen in the museum, reference can be quickly made to its number in the chronological series.

The other division of the catalog consists of white cards, with the names of species at the top, and below this a list of all the specimens belonging to that species, with their museum numbers. These cards are alphabetically arranged, with copious cross references, and their use is to show what the museum possesses in any given class of objects. There is also an alphabetical donor catalog for convenience of reference.

During the past year the following cards were added to the various catalogs:

Zoology	289	Representing 311 specimens.
Geology and Mineralogy	2343	Representing 4025 + "
Anthropology and Archeology	143	Representing 147 "
Donor catalog	193	
Species catalog	565	
Miscellaneous cards	63	
Total cards written	3596	Total 4483 + "

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At the present time the catalog in archeology has been brought up to date; that in zoology is complete except for the insects; and the geological catalog is well under way.

Library

Our library now receives in exchange for the PROCEEDINGS 107 different serial publications, representing 67 institutions. The necessity for having the completed volumes bound is a constantly increasing one, as unbound pamphlets and brochures are easily misplaced and are irreparably damaged by frequent handling. It is also important that we should obtain a number of standard textbooks for use in studying and labeling the collections. At the present time our work is seriously hampered by this lack, and in certain directions would be impossible if books were not kindly loaned from private libraries. A gift of money for binding or for the purchase of textbooks would be one of the most practical ways of helping the museum.

In addition to the periodicals received in exchange the Association subscribes to the American Naturalist and to Psyche; it receives as gifts from Dr. Arthur Hollick, Science, the Monthly Bulletin of the New York State Department of Health, and the Staten Islander; from Mr. William T. Davis the Entomological News; from Mr. Charles L. Pollard the Publishers' Weekly, the Journal of the New York Entomological Society, and the Columbia Alumni News; and from Mr. Ira K. Morris The Broadside.

General Remarks

From an inspection of the accession record for the past year it may be predicted that the museum is no longer in danger of suffering from a lack of donations. On the other hand, we have reached a point where careful discrimination is necessary in accepting material unsuitable either for study or exhibition, as our limited space can be easily filled by objects, which though not necessarily valueless are not adapted to our local needs and scope. Theoretically the accessions committee acts as a buffer between the museum and material offered to it; but practically, nearly all of the dubious accessions come to us under circumstances which render it unwise or impossible to decline them. There is much to be said, therefore, in favor of the general practice among other museums, whereby gifts of every description are received, but on the express understanding that the executive in charge is free to dispose of them as he deems fitting. There is room for a considerable increase in our activities with regard to exchanges, and this is really one of the most effective means of increasing the collections, since all the material received undergoes a selective process at the hands of a trained official. It has been my constant endeavor, when meeting my colleagues in other institutions, to arrange an exchange of specimens whenever such action might prove mutually advantageous. It

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is in this way that the insect collection has grown in two years from practically nothing to a total of nearly 8000 specimens.

But neither gifts nor exchanges obviate the necessity for the occasional purchase of material, and one of the greatest needs of the museum is a fund that shall be devoted exclusively to this purpose. In preparing special exhibits the lack of a single specimen to complete a given series is often fatal to the success of the exhibit; and frequently the only way to obtain such a specimen is to buy it. Likewise we can only hope to complete some of our local collections by the purchase of specimens to represent species now extinct in this vicinity.

Respectfully submitted,

CHARLES LOUIS POLLARD,
Curator-in-chief.

RECORD OF ATTENDANCE FROM MAY 18, 1909, TO MAY 21, 1910

Month		Open days	Number of Visitors	Average per day
May 18–29,	1909	10	96	
June,	1909	22	258	11
July,	1909	23	197	9
August,	1909	21	289	14
September,	1909	21	915	44
October,	1909	21	669	32
November,	1909	19	418	22
December,	1909	22	457	21
January,	1910	20	346	16
February,	1910	18	357	20
March,	1910	23	483	21
April,	1910	22	305	14
May 1–21,	1910	15	202	
		257	4992	

Average per month for year 416
Average per day for year 19

Special Occasions

Borough President's reception, May 25, 1909	14
Section of Art reception, December 27, 1909	100
Bristow Adams' lecture, March 12, 1910	90
R. T. H. Halsey's lecture, April 23, 1910	35
	239

The highest attendance was on October 2, 1909, 157; the lowest on blizzard day, January 14, 1910, when for the first time since the museum was opened, no visitors were recorded.

No special record has been kept of visits of teachers with their classes, but at least 10 such visits have been made; one teacher, from school 34, at Fort Wadsworth, having made three trips to the museum, bringing different children each time.

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LIST OF CONTRIBUTORS TO THE MUSEUM AND LIBRARY DURING 1909–1910

Adams, J. Q.
Aubrey, Harold
Bardwell, Darwin L.
Bayne, Howard R.
Benedict, Charles P.
Beutenmüller, William
Brick, Samuel, Jr.
Bryan, W. W.
Comstock, W. P.
Cromwell, George
Davis, William T.
Delavan, Edward C., Jr.
Doll, Jacob
Dowell, Philip
Dow, R. P.
Duggett, Francis W.
Engelhardt, George P.
Findlay, Mrs. John
Hallinan, Thomas
Hillyer, J. Blake
Hillyer, Jack
Ho-glen, F. M.
Hollick, Arthur
House, H. D.
Hunt, Frederick F.
Janet, Charles
Joutel, L. H.
Langdon, Arthur N.
Leng, Charles W.
Low, Mrs. Edward A.
Ludlum, William
Lynd, Miss Margaret Louise
Maerzen, Pietro
Mayer, Walter S.
Mitchell, C. C.
Museum, Brooklyn Institute
Olsen, C. E.
O'Neill, Lambert, Jr.
Pollard, Charles Louis
Rader, John
Schaefer, Charles
Sleight, Charles E.
Smith, John B.
Smith, Sanderson
State Department, Washington, D. C.
Theler, Miss
Townsend, Mrs. C. E.
Tribus, Louis L.
Tuttle, George W.
U. S. National Museum
Van Name, D. M.
Vreeland, James
Watson, Frank
Wheat, Silas G.
Wilkinson, Mrs. M. J.
Wilson, Percy
Willcox, Mrs. W. G.

Total number of contributors 57

PUBLICATIONS ARE RECEIVED IN EXCHANGE FROM THE FOLLOWING INSTITUTIONS:

New York City

Bronx Society of Arts and Sciences
Central Museum of the Brooklyn Institute of Arts and Sciences
Columbia University
New York Academy of Sciences
New York Botanical Garden
New York Public Library
Torrey Botanical Club

United States

California

California Academy of Sciences
University of California

Colorado

Colorado College Library
Colorado Scientific Society

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Connecticut

Connecticut State Library

District of Columbia

Smithsonian Institution
U. S. Department of Agriculture.
U. S. Geological Survey

Illinois

Augustana College and Theological Seminary
Chicago Academy of Sciences
Field Museum
University of Illinois

Iowa

Davenport Academy of Sciences

Kansas

Kansas Academy of Science
University of Kansas

Massachusetts

American Academy of Arts and Sciences
Boston Society of Natural History
Tufts College

Michigan

University Museum, Michigan Academy of Science

Minnesota

St. Paul Institute of Arts and Sciences

Missouri

Academy of Science of St. Louis
Missouri Botanical Garden
Public Library of St. Louis
University of Missouri

Montana

University of Montana

North Carolina

Elisha Mitchell Scientific Society

New York

Rochester Academy of Science
University of the State of New York

Ohio

Cincinnati Society of Natural History
Geological Survey of Ohio
Lloyd Library
Ohio State Archeological and Historical Society
Wilson Ornithological Club

Pennsylvania

Academy of Natural Science of Philadelphia
Pennsylvania Department of Agriculture
Pennsylvania Museum and School of Industrial Art
Warren Academy of Sciences

Rhode Island

Roger Williams Park Museum

Vermont

University of Vermont

Wisconsin

Public Museum of the City of Milwaukee
Wisconsin Academy of Sciences, Arts and Letters

Foreign

Bohemia

Societas Entomologica Bohemiae

Brazil

Sociedade Scientifica de Paulo

Costa Rica

Museo Nacional

Finland

Societas pro Fauna et Flora Fennica

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Germany

Kaiserlichen Leopoldinisch-Carolinschen Akademie der Naturforscher

Oberhessischen Gesellschaft für Natur und Heilkunde

Ireland

Belfast Naturalists' Field Club

Japan

Sapporo Natural History Society

Mexico

Instituto Geologico de Mexico

Scotland

Natural History Society of Glasgow

Sweden

Royal University

Uruguay

Museo Nacional de Montevideo

Canada

Canadian Entomologist
Geological Survey of Canada
McGill University
Ottawa Field Naturalists' Club
Historical and Scientific Society of Manitoba
Natural History Society of New Brunswick
Nova Scotia Institute of Science

Total number of institutions sending exchanges..... 67
Total number of publications received..... 107

PUBLICATIONS ARE RECEIVED AS GIFTS FROM THE FOLLOWING PERSONS:

William T. Davis
Arthur Hollick
Ira K. Morris
Charles Louis Pollard

Total number of gifts of publications..... 8

PUBLICATIONS ARE DEPOSITED AS LOANS BY THE FOLLOWING:

Charles Louis Pollard

Total number of publications lent..... 3

THE PROCEEDINGS OF THE ASSOCIATION ARE SUBSCRIBED FOR BY THE FOLLOWING INSTITUTIONS:

Gray Herbarium of Harvard University
John Crerar Library of Chicago, Ill.
New Hampshire State Library, Concord, N. H.

Total number of subscribers 3

NEW EXCHANGES WERE ADDED TO THE LIST DURING 1909–1910, AS FOLLOWS:

Connecticut State Library, Hartford, Conn.
New York Public Library, New York City
Pennsylvania Department of Agriculture, Division of Zoology, Harrisburg, Pa.

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Pennsylvania Museum and School of Industrial Art, Philadelphia, Pa.
Provincial Museum, Victoria, B. C.
University of Illinois, Urbana, Ill.
Warren Academy of Sciences, Warren, Pa.

Total number of new exchanges added..... 7

LOAN EXHIBITS DURING 1909–1910

Date of instalation	
May, 1909.	Exhibit of old china, chiefly Lowestoft, obtained through committee on exhibits, Section of Art.
September, 1909.	Exhibit of old engravings appropriate to Hudson-Fulton celebration, lent by Gerald F. Shepard.
November, 1909.	Exhibit of Mielatz and Pennell drawings, lent by the artists; and of old prints and engravings, lent by Mr. Whittle, of the Century Co., Rev. George C. Lenington, Mrs. Drury, Mr. W. T. Davis, Mrs. George R. Boynton, and Mr. F. L. Stoddard, all obtained through Miss Lucy J. Kipper.
December, 1909.	Exhibit of old Japanese color prints, lent by Mr. Bolton C. Brown and Mr. F. L. Stoddard, obtained through Dr. J. Q. Adams.
December, 1909.	Exhibit of old Sheffield plate, silver, and cut glass, obtained through committee on exhibits, Section of Art.
March, 1910.	Exhibit of old samplers, lent by Mr. George Plimpton, Mrs. Everitt C. Macy, and the Teachers' College of Columbia University, obtained through Mrs. J. Q. Adams.
May, 1910.	Exhibit of Wedgwood, old laces and embroideries, obtained through committee on exhibits, Section of Art. Exhibit of old laces and embroideries, lent by Teachers' College and by Mrs. Oliver C. Bronson and Miss Sage, obtained through Mrs. J. Q. Adams.

Among individuals who lent articles to complete Hudson-Fulton exhibit were Miss S. Gertrude Clark, Mr. L. L. Tribus, and Mr. C. L. Pollard.

ANNUAL REPORT OF THE SECRETARY

Number of members and patrons on the roll at date of last annual report:

Active	337
Corresponding	4
Life	2
Honorary	2
Patrons	5

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Since added:		
Active	14	
Ex-officio	1	
Patron	1	
		16
		366
Since resigned	16	
Since deceased	9	
Since dropped	7	
		32
		334

This includes 319 active, 4 corresponding, 2 life, and 2 honorary members, 1 ex-officio member, and 6 patrons.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE TREASURER

Income

Balance in hand at date of last annual report		$ 155.05
Since received:		
Dues	$ 881.50	
Subscriptions to PROCEEDINGS	31.30	
Interest on life membership fund	4.08	
City appropriation	4,333.30	
		$5,250.18
Total		$5,405.23

Disbursements

Association account:		
Loans paid	$ 700.00	
Sundry expenses	248.91	
Printing PROCEEDINGS	155.90	
Postage and stationery	50.50	
Interest on loans	29.92	
Administration (Secretary and Treasurer)	24.87	
Subscriptions to periodicals	5.00	
		$1,215.10
City appropriation account:		
Salaries	$3,500.00	
Supplies and equipment	517.26	
		$4,017.26
Total		$5,232.36
Balance in hand		$ 172.87

C. A. INGALLS,
Treasurer.

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REPORT OF THE MUSEUM COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: Your committee held a meeting on Saturday, December 4, 1909, at which time it was decided to remove certain books and objects not available for museum purposes to a place of storage offered without expense to the Association. This removal was later accomplished, and a list of the objects stored was made by the curator.

The other matters relating to the museum will be found in the report of the curator-in-chief.

WM. T. DAVIS,
Chairman.

REPORT OF THE COMMITTEE ON ACCESSIONS

TO THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: Your committee on accessions offers the following report for the year 1909–1910.

The year just closing has been notable for the increasing interest shown in the museum as a place for the safer deposit and better display of a great variety of material.

The total number of gifts, not counting exchanges, is reckoned at 4,639, the number of donors 46.

Among the larger accessions were: Mr. R. P. Dow's gift of 1,151 specimens of exotic butterflies and moths, for which Mr. Dow was made a patron; 1,030 specimens of violets from Dr. H. D. House for the herbarium; about 1,500 shells and other objects from Mrs. C. W. Townsend; about 260 biological specimens from Mr. Wm. T. Davis; about 100 specimens each from Dr. Arthur Hollick and Mr. John B. Smith; and smaller but important gifts from Mr. F. M. Ho-glen, Dr. Philip Dowell, Mr. Geo. Cromwell, Mr. C. L. Pollard, and Mr. Sanderson Smith.

Three meetings of the committee were held: one each in December, February, and May.

S. McK. SMITH,
Chairman.

REPORT OF THE WOMEN'S AUXILIARY COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

The activities of the women's auxiliary committee were confined to assisting the art loan committee of the Section of Art at the reception in the museum on December 27, 1909.

ADELINE A. T. HOLLICK,
Chairman.

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REPORT OF THE SECTION OF BIOLOGY

A special meeting of the section was held October 20, 1909, to arrange for program at the following meeting of the Association on November 20.

The regular meeting of the Association on Saturday, November 20, was held under the auspices of the Section of Biology. The scientific program of this meeting consisted of addresses commemorating the one hundredth anniversary of the birth of Charles Darwin and the fiftieth anniversary of the publication of The Origin of Species. An account of the meeting is given in the Association minutes.

On March 12, 1910, a meeting of the section was held in the museum with an attendance of about 90, the special feature of the meeting being a lecture by Mr. Bristow S. Adams, of the U. S. Forest Service, on the topic A Prodigal Nation, illustrated by handsomely colored lantern slides.

The annual meeting was held on April 9.

The section has thus, during the past year, held four meetings, at each of which the prominent feature has been a scientific program.

Respectfully submitted,

PHILIP DOWELL,
Recorder.

May 18, 1910.

REPORT OF THE SECTION OF ART

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

The Section of Art was formally organized on March 10, 1909. Prior to that, the art interests of the Association were looked after by a committee of twelve, known as the art committee of the Association. When the Section of Art came into being, this committee was dissolved, to be reappointed as the committee on exhibits, one of the two standing committees of the section.

When we remember its recent organization, it will be seen that the past year has been, practically, the freshman year of the Section of Art. The activities of the year may be summarized under three headings: Meetings, Excursions, and Loan Exhibits.

After Dr. J. Q. Adams assumed the chairmanship, a business meeting of the section was called for June 4. At this meeting the possibilities of usefulness open to the section were outlined by the chairman, and free discussion was invited. Various suggestions made at this meeting bore fruit later in the lectures given on art topics, and the excursions that were taken to places of artistic interest.

On December 18 the regular monthly meeting of the Association was in charge of the Section of Art. Through the courtesy of the chairman, the services of Lewis F. Pilcher, Professor of Fine Arts in Vassar College, were secured for this occasion. The program consisted of a lecture on the topic Doric Architecture as Applied to the Subtreasury Building, at Broadway and Nassau Streets, New York City.

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The lecture was preceded by a brief business meeting of the section.

Permission having been obtained from the trustees, invitations were sent out in the name of the art section for a private view, on December 27, of the loan collections then on view in the museum.

In arranging this function the ladies of the committee on exhibits were assisted by the women's auxiliary committee of the Association. The ladies in charge felt repaid for their exertions by the evident pleasure of their guests, most of whom were non-members of the Association, this being the class which the committee desired to interest.

The excursions taken by the section were the outcome of a suggestion made by Mrs. Adams. The first trip was made to City Hall in New York, under the guidance of Dr. Adams.

The decorations of the Governor's rooms and the historic portraits in the building were examined with extreme interest. A second trip to Manhattan was taken a week later, Mr. F. L. Stoddard conducting the party. The objects of this visit were Mr. Stoddard's beautiful wall decorations in the Hebrew Technical School for Girls, and Louis Tiffany's masterly altar piece in the Church of the Ascension.

Informal excursions were also taken by some members of the section to see the collection of Wedgwood at Duveen's gallery, and to visit the Dutch paintings and the colonial furniture exhibited at the Metropolitan Museum in connection with the Hudson-Fulton celebration.

The loan exhibits which our section has provided for the Staten Island Museum during the year have spoken eloquently for themselves.

Both work and responsibility are entailed in collecting and arranging objects of a fragile and valuable nature, and a special word of acknowledgment is due the committee on exhibits and the members of the section who have individually undertaken this task.

A detailed description of the loans is impossible within the limits of a report, but they may be briefly catalogued.

On May 25 the committee on exhibits installed a collection of old china, consisting largely of Lowestoft ware but including specimens of French, English, Russian, Chinese, and Indian porcelain. This exhibition caused much discussion among museum visitors concerning Chinese versus English Lowestoft, and incidentally encouraged investigation into the history of the manufacture of this debatable ware.

Mrs. Hunt earned the thanks of the committee by photographing this collection.

In November a large collection of prints and engravings was secured for the museum through the services of Miss L. J. Kipper. Part of this loan consisted of old engravings and etchings, one case being devoted to Hogarth prints. The modern part of this collection included eight pastel drawings by Joseph Pennell and thirty-three prints by Charles Mielatz, the subjects being characteristic scenes and buildings of New York.

This exhibit was followed by one of curious old Japanese prints, loaned by Messrs. Bolton C. Brown and F. L. Stoddard, and obtained for us by Dr. Adams.

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In December the committee on exhibits was ready with a new loan of old silver, Sheffield plate, and cut glass of the eighteenth and early nineteenth centuries. A new case, built after a design in use in the Metropolitan Museum, came into effective service at this time, the glass interior enhancing the brilliancy of the objects placed upon its shelves.

In March a unique group of old samplers from the collection of Mr. George A. Plimpton was exhibited through the kind offices of Mrs. Adams. There were about sixty of these wonderful examples of patient stitchery, England, France, Germany, Italy, Spain, and Sicily being represented among the little embroiderers of bygone days.

The important work of the committee on exhibits has already been mentioned. Besides meeting frequently to discharge its practical duties, the committee has held delightful semisocial meetings at the homes of three of its members, Miss Clark, Mrs. Kennedy, and Mrs. Adams.

In concluding the year's record, it may be stated that the section has at present a membership of 26.

Two resignations from the executive board are to be regretted, that of Mrs. Hunt, vice-chairman of the section, and of Mrs. Kennedy, chairman of the committee on exhibits.

The immediate mission of the Section of Art may well be summed up in the felicitous phrase of an artist, a guest at our June meeting: "The work of this art section should be the conversion of the community to belief in the need of art for everyone."

LUCY J. KIPPER,
Recorder.

REPORT OF THE SECTION OF HISTORICAL RESEARCH

The Section of Historical Research, the formation of which was authorized by vote of the trustees last October, met for purposes of organization in the museum on May 18, 1910. Messrs. E. C. Delavan, Jr., Arthur Hollick, S. McK. Smith, Rev. Hobart Clark, and Charles L. Pollard in attendance. Mr. Delavan was elected temporary chairman, and Mr. Pollard temporary secretary. The chairman then stated the objects of the section, and after discussion the section balloted for permanent officers, Mr. Delavan being elected chairman and Mr. Smith recorder.

Upon motion the chair was authorized to appoint one member to serve with the chairman and the recorder as a committee to draft bylaws. He appointed Mr. Pollard as the third member.

Upon motion the section then adjourned subject to the call of the chair.

CHARLES LOUIS POLLARD,
Temporary Secretary.

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Proceedings of the Section of Biology

March 12, 1910

The meeting was held in the museum. About 90 persons were in attendance.

The scientific program consisted of a lecture by Mr. Bristow S. Adams, of the Forest Service, United States Department of Agriculture, on the topic: A Prodigal Nation, freely illustrated by handsomely colored stereopticon illustrations. The speaker described the destruction of the forests and made an eloquent plea for their conservation.

April 9, 1910

The meeting was held at the home of the chairman, Mr. Charles L. Pollard, New Brighton. William T. Davis was elected chairman and Philip Dowell was reëlected as recorder.

A communication was read, in the form of a letter, regarding the desirability of securing better protection for our native birds. A discussion followed on the desirability of more general conservation of nature. The chairman was authorized to draft a circular in the interest of conservation to be printed and mailed, also a paster to warn against and discourage the burning of our forests.

Mr. Howard H. Cleaves exhibited photographs showing some views of forest fires in the vicinity of Oakwood, Staten Island, October 12, 1909; also a photograph showing the nesting place of a pair of redwing blackbirds. In connection with the last he read a note on the nesting habits of these birds, entitled The Redwing Changes Its Nesting Site. (Printed in full in this issue, p. 71.) He showed also some photographs of the white-breasted nuthatch.

Mr. Charles L. Pollard reported the acquisition by the museum of a specimen of the short-eared owl, *Asio accipitrinus*, from Fort Wadsworth, Staten Island.

Dr. Arthur Hollick showed herbarium specimens of plants collected in ballast ground near Arlington, Staten Island, some of which were new to the island flora.

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Publications of the Association

1. Proceedings of the Natural Science Association of Staten Island

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. Proceedings of the Staten Island Association of Arts and Sciences

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents, and Index, contains:

Part I, June–December, 1905, pp. 1–20, issued April 10, 1906.

Part II, January–May, 1906, pp. 21–69, issued July 9, 1906.

Part III, October–December, 1906, pp. 71–92, issued April 17, 1907.

Part IV, January–May, 1907, pp. 93–136, issued September 20, 1907.

Volume II, with Title Page, Table of Contents, and Index, contains:

Part I, October 1907–January 1908, pp. 1–46, issued October 17, 1908.

Part II, February–May, 1908, pp. 47–124, issued September 30, 1909.

Part III, July 1908–February 1909, pp. 125–177, issued August 18, 1910.

Part IV, March–May, 1909, pp. 179–251, issued September 16, 1910.

Volume III, Part I, October–December, 1909, pp. 1–54, issued April 28, 1911.

Part II, January–May, 1910, pp. 55–108, issued May 2, 1911.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i–xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i–xxxvii, 1907), will be sent free on application.

3. The Museum Bulletin

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Current numbers sent free on application. Back numbers 2 cents each.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

Staten Island Association of Arts and Sciences,

New Brighton, N. Y.

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MUSEUM STAFF

Curator-in-chief
Charles Louis Pollard, M.A.

Museum Assistant
Miss Agnes L. Pollard

DEPARTMENT OF ZOOLOGY
William Thompson Davis, *Honorary Curator*
James Chapin, *Honorary Assistant*

DEPARTMENT OF BOTANY
Philip Dowell, M.A., Ph.D., *Honorary Curator*

DEPARTMENT OF GEOLOGY, MINERALOGY, AND PALEONTOLOGY
Arthur Hollick, Ph.D., *Honorary Curator*

DEPARTMENT OF ANTHROPOLOGY AND ARCHEOLOGY
Alanson Skinner, *Honorary Assistant*

DEPARTMENT OF ARTS AND ANTIQUITIES
John Quincy Adams, Ph.D., *Honorary Curator*

DEPARTMENT OF BOOKS
In charge of the Museum Assistant

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VOL. III October 1910–February 1911 Part III

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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[Issued February 15, 1912]

THE NEW ERA PRINTING COMPANY

LANCASTER, PA.

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THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

OFFICERS, 1910–1911

President—Hon. Howard Randolph Bayne
First Vice-President—William Thompson Davis
Second Vice-President—William Hinman Mitchill
Secretary—Arthur Hollick
Treasurer—Charles Arthur Ingalls

BOARD OF TRUSTEES, 1910–1911

I.—Elective Members

TERMS EXPIRE 1911

Philip Dowell
John Blake Hillyer
George Scranton Humphrey
William Hinman Mitchill

TERMS EXPIRE 1912

Howard Randolph Bayne
William Thompson Davis
Arthur Hollick
Charles Arthur Ingalls

TERMS EXPIRE 1913

John Quincy Adams
John DeMorgan
Stafford Clarence Edwards
James Richard Walsh
William Goodenow Willcox

II.—Ex-Officio Members

The President of the Borough of Richmond
Hon. George Cromwell
The District Superintendent of Schools in the Borough of Richmond
William Louis Ettinger

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PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

VOL. III OCTOBER 1910–FEBRUARY 1911 PART III

Changes and Inconsistencies in the Spelling of Local Place Names by the United States Geological Survey[1]

ARTHUR HOLLICK

On two previous occasions, at our meetings of February 14, 1903, and November 18, 1905 (see *Proc. Nat. Sci. Assoc. Staten I.* 8: 52. 1903, and PROC. STATEN I. ASSOC. 1: 10. 1905), I had occasion to criticize the havoc which the government authorities are making in changing the spelling of place names on maps and in publications and thus often obscuring the origin or changing the original meaning of such names.

The postal authorities often find it necessary to make a complete change of name when a new office is established, in order to obviate having two offices of the same or similar names in one state, as was done in the case of Dongan Hills, so as to avoid possible confusion between Garretsons on Staten Island and Garrison on the Hudson. In connection with such a change or any similar one there can be no quarrel or criticism; but any alteration in the spelling of a place name, no matter how trivial the change may be, should not be sanctioned or tolerated unless some good reason is shown for it, and the burden of proof should always rest on those who propose the change. If the authorities

[1] Presented October 15, 1910.

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who are responsible were consistent and followed some well-defined rule or rules when making changes, or gave some reason for doing so, there might be opportunity for discussion; but a glance at any of the maps issued by the United States Geological Survey indicates that changes are made in an arbitrary manner, without following any system and, in many instances, without any apparent reason.

The larger number of such cases arise from the use or disuse of the possessive case and apostrophe. When, for example, the name of Prince's Bay was made to appear either as Prince or Princess Bay, its supposed original derivation from the family name of Prince was destroyed, and some erroneous connection with royalty would naturally be assumed by anyone not familiar with our local history or traditions. Some of us even regard the final "s" on Giffords with affection, and would regard it as unwarranted grammatically and as unfortunate historically if it were dropped, as has been done in connection with Hulett's and Turner's.

Following are a few examples of inconsistencies in the use of the possessive case, selected at random from recently published maps of New York and vicinity:

Shooters Island,	Hunter Island,
Blackwells Island,	Randall Island,
Governors Island,	Duncan Island,
Wards Island,	Ward Point,
Grace's Point,	Lloyd Neck,
Bennetts Neck,	Seguine Point,
Willets Point,	Rodman Neck,
Nye's Neck,	Tom Point,
Garritsons Creek,	Latourette Pond,
Peters Pond,	Woodruff Creek,
Toneys Brook,	John Pond,
Phinney's Harbor,	Lambert Cove,
Johns Point Marsh,	Doctor Hole Hassock,
Bulls Head,	Owl Head,
etc.	etc.

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If an explanation for these vagaries of the map makers is sought in the publications devoted to descriptions of the origin and meaning of place names,[2] the lack of system becomes even more glaringly apparent. For example, "Wards" Island, in the East River, is said to be "named for Jasper and Bartholomew Ward," and "Ward" Point, on Staten Island, to be "named for the man who formerly owned that part of the island." The origin of the name in each instance is from the family name of Ward; but in connection with the island the possessive case is retained, while in connection with the point it is ignored. It cannot be that such grammatical distinctions are based upon topographic features, because they do not hold good in other parallel cases, as may be seen by consulting the preceding list. A possible explanation is suggested in the fact that "Wards" Island, having been named after *two* men, might be indicated as plural, while "Ward" Point, named after *one* man, might be in the singular; but this theory will be found untenable when it is seen, a little further along, that Wrightsville is "named for Samuel Wright," while Wrightville is "named for the Wright brothers"!

However, if we have lost the final "s" from Ward's Point and Prince's Bay we have gained one in Elliotville, which is spelled "Elliotsville," as it should be, and for the reason given, viz., "named for Dr. Samuel M. Elliot." Tottenville, however, is not changed to Tottensville.

It is both the duty and the privilege of this association to do what it can to preserve the meanings of our local place names and to protest against any unnecessary changes which may tend to obliterate or obscure them. We should also endeavor, when new names are proposed, to see that they are correctly spelled and are appropriate. Such misnomers as "St. George," "Woods of Arden," etc., which have no connection with our local history or traditions, should be rendered impossible of adoption in the future.

The publication committee has been very liberal with contribu-

[2] Gannett, Henry. The Origin of Certain Place Names in the United States. U. S. Geol. Surv. Bull. 258. Second Edition, 1905.

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tors to the PROCEEDINGS in regard to individual preferences in the spelling of local place names, but it has been deemed advisable by the committee that some rule or rules should be adopted for a uniform system or code of place nomenclature in the publications of the Association, and in this connection the following resolution is herewith submitted:

Resolved, That the Board of Trustees be requested to instruct the publication committee to preserve, as far as possible, the origin and meaning of local place names in the spelling of the same, wherever any such names may appear in any of the publications of the Association, and to adopt a uniform code of nomenclature for all such names in all papers submitted for publication.

[NOTE. This resolution, we hope, is not to be interpreted so as to place the Association on record as opposed to progress. Radical changes in place names are undesirable and should not be resorted to unless they are unavoidable. Such changes should be opposed by the Association. But when a slight change is made in a geographic name so as to make it somewhat shorter or simpler, especially when such a change is made by an authoritative national body and does not destroy the historical origin of the name; then we should not hesitate but fall in line with the rest of mankind in the onward march of progress.

When the United States Geographic Board decided to drop the superfluous apostrophe in geographic names, this was a forward step in the proper direction, even though some inconsistencies may have been overlooked. The historical origin of a name is not lost by the omission of the apostrophe. Neither does it detract from the honor of the person for whom a place is named to use his name as a direct modifier instead of using it as a modifier in the possessive case.

We may as well insist on writing Dongan's Hills instead of Dongan Hills, Pitt's Burgh instead of Pittsburg, John's Son instead of Johnson, or Hudson's Bay instead of Hudson Bay, as to insist on writing Prince's Bay instead of Prince Bay. The name Prince's Bay may imply that the bay was named in honor of the family name Prince, or that it was at one time owned by Prince; but it may also mean that the bay was named in honor of a prince, or that it was once owned by a prince. Likewise, the name Prince Bay may mean, either that the bay was named in honor of the family name Prince or that it was named in honor of a prince. The one form of the name or the other does not settle the mooted question whether the bay was named for royalty or for an ordinary citizen by the name of Prince. (See *Proc. Nat. Sci. Assoc. Staten I.* 8: 88. 1903.)—PH. D., chairman of the publication committee.]

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Miscellaneous Observations on the Natural History of Long Island, N. Y.[1]

William T. Davis

The members of the Brooklyn Entomological Society have undertaken the collecting of data looking forward to the ultimate publication of a list of Long Island insects. With this in view, Mr. George P. Engelhardt, of the Brooklyn Museum, and the writer spent some days during September and October on the eastern part of Long Island; and while we collected and recorded many insects, we also noted some other facts of interest.

The beach plum, *Prunus maritima* Wang., is common on Staten Island in favorable situations, and the purple fruit is much esteemed for preserving. Of this plant we saw many hundreds on the eastern part of Long Island, and as the flavor of the fruit differs considerably on the different bushes, we were always on the lookout for the very best, and of course took many samples. We were surprised, however, to discover, near Promised Land, a little bush about fifteen inches high that bore five plums of a yellow color. One we ate and found it to be perfectly ripe, and the other four were carefully removed and placed in formalin. A stake was driven in the ground by the bush, which was also tagged, and it is our hope to revisit it some future day and see if it still continues to bear yellow plums.

Conocephalids were often heard as we tramped along and we noted the songs of four species of these grasshoppers and collected the songsters. A colony of *Conocephalus lyristes* R. & H. was found near Promised Land, thus extending the known distribution of the species northeastward on the island about 85 miles. On the downs at Montauk and near Great Pond, where the wild ducks are so plentiful, we found *Conocephalus triops*

[1] Presented October 15, 1910.

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Linn. in numbers, and saw one of them being carried by the wasp *Sphex ichneumonea* Linn. to her burrow in the adjoining sandy road. In the mountains of northern Georgia we have found *Sphex* partial to *Atlanticus dorsalis* Burm. Dr. A. S. Packard records *Orchelimum* as a prey of this *Sphex*.

Katydids, *Cyrtophyllus perspicillatus* Linn., sang often in the day, as is their habit in the fall, and sometimes we heard them at 11 or 12 a. m., when the sun was at its warmest. They were also laying their eggs in the bark of the pitch pines, both at Calverton and Yaphank, and it did not seem to make any difference to them whether they faced head downward or the reverse. The ovipositor was inserted sidewise into the layers of the thick bark, and the six insects that were observed thus engaged were located on the tree trunks all the way from one to five feet above the ground. We also found two females on the trunk of a large oak, but they were not laying eggs at the time. About the first of October many of the katydids die, and we found one dead male with his caudal appendage wedged into the bark of an oak, and also one female on the trunk of a pine, that was so nearly dead that she moved her legs and antennae but feebly when we removed her from the tree.

The common box turtle, *Cistudo carolina* Linn., is described as black or dark brown above, with numerous yellow blotches, the markings being extremely variable. In the woods north of Amagansett we found a box turtle of a chocolate brown color. At first the shell showed no yellow markings, but upon being rubbed with a cloth these showed faintly. The yellow markings on the head and legs were also not as pronounced as usual. This turtle was about two thirds grown, being three and three-fourths inches in length along the plastron.

Cedar birds, *Bombycilla cedrorum,* were quite plentiful in one of the wooded hollows that occur in the Montauk downs, and we were interested to see them fly from some spreading sour gum and zigzag about in their efforts to catch the white and black geometrid moths, *Cingilia catenaria* Cram., that were very plentiful.

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The birds were not always successful and quite often came back to the perching tree with empty bills.

A gray squirrel, *Sciurus carolinensis,* at Calverton, near the Old Forge on the Peconic River, had made a nest in a tree in the usual manner, but had worked into the structure the skeletonized leaves of an oak. The leaves had been eaten by the larvae of a species of *Anisota* until only the midrib and principal veins remained. The squirrel had gnawed off the ends of the branches, each twig bearing several of the skeletonized leaves, and with this wiry material the nest had been lined. In many localities the bark of the red cedar is used by gray squirrels, and it seemed to us that in this instance good judgment had been shown in using the best material at hand.

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The Least Shrew in Captivity[1]

Howard H. Cleaves

Because of his diminutive size and peculiar habits, perhaps there is no local mammal that has been observed less and about which less has been written than the least shrew, *Blarina parva* (Say). In fact, not until recently (that is, within the past few years) were any taken at all on Staten Island, and not until very recently were any obtained in a sufficiently perfect and healthy condition to allow of their being kept for any appreciable length of time in captivity. I believe that heretofore the specimens found were either dead or were killed in the catching. Mr. James Chapin has one or two records of having found identifiable parts in owl pellets. The reason, it is said, that both the short-tailed and the least shrews are not taken more frequently by owls and hawks is that the birds of prey object to the disagreeable odor that both of these mammals give off. It is, indeed, very offensive, even to the human nose, and if the tiny beasts taste anything like what this odor might imply, it can be readily understood why hawks and owls, even in winter, when hard pressed for food, abide by the rule of "hands off," or rather "talons off."

On Sunday, September 25, 1910, Mr. Alanson Skinner came to my house at "Prince's Bay" and turned over to me two least shrews which he and the Wort boys had captured at "Lake's Island," Staten Island. Out on this lonely piece of land, which is not an island at all, but simply a sandy strip isolated from the mainland by salt meadows, there stands an old deserted house, and near the house, where it is evident that a barn once stood, there are strewn over the ground large sections of tarred paper. It has been our custom for several years to go each fall to this area and hunt for meadow mice under the pieces of paper. Two or three

[1] Presented at a meeting of the Section of Biology, October 31, 1910.

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mice were generally our reward, and one of these was kept captive for several months, in 1909, by Mr. James Chapin. But on the occasion of the recent "round up," in which I unfortunately did not take part, it was the good luck of the participants to capture not only meadow mice but two of the rare little least shrews; and it is of my few days' experience with these that I would write.

Before they were handed to me they had been roughly wrapped up in a handkerchief and carried in a rather tight coat pocket. This, coupled with the difficulty of creating a congenial artificial environment and supplying proper food for the delicate little creatures, may have some bearing on the fact that one survived only three days, while the other lived until the morning of the fifth day. But after being removed from the handkerchief they were given a more roomy apartment in the shape of a breeding cage for moths. At the bottom of the cage was placed a piece of sod, which retained considerable green grass, and in one corner a couple of handfuls of cotton. Although it was not expected that the shrews would touch them, a number of kernels of Indian corn were scattered about in another corner of the floor of the cage.

And now began the nightly search for earthworms, for these make up a part of the approved diet of the least shrew. Each evening I took a lantern and scouted about for "night walkers" from one end of our yard to the other. But angleworms were as scarce, so to speak, as "hens' teeth," for the ground was hard and dry as the result of a long rainless spell, and the night air was cold. However, the first search resulted in the capture of seven worms, and only a half of one of these remained the next evening. The next night only two worms were captured, and when I examined the cage on Tuesday night (September 27) I discovered that in addition to having done away with the worms the shrews had attacked the kernels of corn, gnawing out, in each case, only a part of the soft germ. From the first I had observed that one of the shrews was indisposed and would remain

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under the pile of cotton or under the sod while the other scurried about the cage and attacked the worms. In fact, I am quite certain that this quiet individual ate little or no food and that his death, which occurred some time on Wednesday, was caused by starvation. My observations, then, were confined principally to the more active and long-lived individual. He, too, stayed a great deal under the cotton, but this was mostly in the daytime; at night he became active, although sometimes he disliked to show himself when a lamp was near. Two or three times I removed the cotton and the sod, leaving no place for retreat, and, reaching into the cage, touched and even stroked the little fellow on the back. At no time did he endeavor to climb up the wire-screen walls of the cage, and when my fingers touched him he stood very still and did not seem in the least perturbed. Had this been tried with a whitefooted mouse, probably the rim of the cage would have been cleared with a single jump. However, a lamp almost always stood close beside the box on these occasions (unless it was done by daylight), and the apparent tameness of the subject may not have been tameness at all but a partial blindness caused by the glare of the light.

On Wednesday night I succeeded in catching five earthworms and by the following evening the single shrew had devoured them all. On several occasions I observed very closely the methods employed by the captive in attacking and devouring a worm. To watch closely the movements of the shrew it was necessary to place a lamp near to the cage, and possibly on this account he was not so active as he would otherwise have been; but I am sure that, even so, he was too energetic to suit his prey. Darting out from his retreat beneath the cotton, he would seize a worm near the head and tug away so hard that the shrew's feet would slip from beneath him on the loose dirt on the floor of the cage. Suddenly he would release his grip and take hold in another place, the worm writhing to no effect at each attack. Then the shrew would scamper to cover, but in a second reappear from beneath the cotton and dart again at the worm, always taking hold at the head.

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After several minutes of this incessant work the worm would finally be dragged under the cotton, when the feast would begin.

In order to watch the meal progress it was necessary to gently lift the cotton so as not to disturb the diner. Without going through the formality of killing the victim, the shrew would begin at once to gnaw away at the head. To any creature having a more highly developed nervous system than the earthworm this would undoubtedly have been a most painful proceeding. And it must have been a tedious task, for at the end of five minutes only about a quarter of an inch had been consumed, and yet the shrew ate five worms in a rather short time, supposedly in a night.

The only sound that I heard come from the prisoner was an almost inaudible "piff, piff," uttered very rapidly (almost explosively) while he was eating.

My chief regret is that he did not survive long enough to be photographed.

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The Seventeen-Year Cicada on Staten Island between the Years 1894 and 1911[1]

William T. Davis

Next June our island will resound with the songs of the seventeen-year cicada, *Tibicen septendecim* L., for 1911 is "Locust Year" in the valley of the Hudson. This brood covers a considerable area and extends to the south into the mountains of North Carolina.

It is well known to entomologists that while the seventeen-year cicada appears periodically in certain districts in great numbers, there are other years when it is to be found in the same places but in less numbers. The limits of the various broods are not sharply defined, and when a few seventeen-year cicadas are found on Staten Island, for instance, there may be a considerable visitation of them not many miles away. The advent of the white man with his farming operations and the consequent destruction of the forests, have had an influence upon the cicadas and, no doubt, broken up the broods to some slight extent.

In the *Proceedings of the Natural Science Association of Staten Island* for February 1894, an account is given of the appearance of the seventeen-year cicada on the island between the brood years of 1877 and 1894. In 1881 a considerable number appeared belonging to the brood now known as number VI. In 1885, 1888, and 1889 only slight evidence was found of the occurrence of the insect on the island. In 1890 and 1892 a few were found, and in 1893 they were more numerous, but these last may have been precursors of the general swarm of 1894.

Since 1894 the seventeen-year cicada has been observed on the island during eight different years, as appears by the following chronological record.

[1] Presented January 21, 1911.

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1895

On June 15 I heard several seventeen-year cicadas singing near the middle of the island, and on the 16th several others were heard in the Clove Valley. They also occurred at West New Brighton.

1896

The only evidence of the cicada on the island during this year was the finding of a pupa case on Todt Hill on the 6th of June.

1897

Dr. Joseph C. Thompson gave me a red-eyed cicada with pupa skin, which he had found on a tree on Belair Road, Rosebank.

1898

As the seventeen-year cicada appeared in considerable numbers on the island in 1881, it was expected that they would be found quite abundant in 1898 (see *Proc. Nat. Sci. Assoc. Staten I.* **6**: 60. S 1898). A cicada pupa was found in its cone on the side of the Clove Road as early as April 30. Later other cones were found at the same place among the dead wet leaves, and by the middle of June the insects were heard in many parts of the island. They were abundant on Todt Hill and Ocean Terrace, also in the Clove Valley, and on June 12 I received a box containing 104 cicada pupas collected by the family of Mr. Charles W. Leng at West New Brighton. Mr. Louis H. Joutel also found a considerable number of cicadas on the 5th of June at Fort Lee, N. J.

1902

In June a seventeen-year cicada was found at West New Brighton in Mr. Leng's garden, and on June 12 I found a pupa skin in the valley of Logan's Spring brook. Considering that Brood X was so abundantly represented in parts of New Jersey, it is remarkable that more cicadas were not found on Staten Island in 1885 and 1902.

1906

In April Mr. Alanson Skinner gave me a pupa that he had found under a stone in the Clove Valley, and on June 10 we heard

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a seventeen-year cicada singing in a tree at Richmond Valley. On parts of Long Island, as at East Port, Yaphank, Half Way Hollow hills, Pinelawn, etc., Brood XIV appeared in considerable numbers.

1907

A note was made upon this brood, now known in Mr. Marlatt's arrangement as number XV, in these PROCEEDINGS for October, 1907, from which we quote the following: "On March 31, Mr. Alanson Skinner gave me a pupa that he had found under a stone at Woodrow. On June 22 I heard several cicadas singing in the trees at Woodrow and vicinity, and found two pupa skins in an apple tree on the farm of Mr. Isaac Wort. Mr. Wort had also heard the cicadas at various times, and he presented me with a pupa which he had found some time before my visit.

"The following day a cicada was heard at Watchogue at the other end of the island. Later in the summer, while with Mr. Henry Bird in the Clove Valley, we each found a pupa skin of the seventeen-year cicada. Mr. Chas. P. Benedict informs me that he found in June many pupa skins as well as fully developed cicadas at his house on Manor Road, West New Brighton. In New Jersey the seventeen-year cicada occurred at Westfield, Plainfield, and Newfoundland.

"It may be seen from the foregoing that the individuals were quite numerous and no doubt sufficiently so to insure the insect's appearance in 1924."

1910

Mr. Isaac Wort, of Woodrow, reported to me that he had heard several seventeen-year cicadas singing about his farm in early summer but that they were not numerous. Seventeen-year cicadas are usually to be found in small numbers in the summer previous to their regular appearance, and no doubt those of 1910 were precursors of the great swarm that is to appear in May and June, 1911.

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The Possibilities and Limitations of Nature Study in the Public Schools[1]

HOWARD H. CLEAVES

Naturally the conditions conducive to nature study are least favorable in the city schools, considerably more agreeable in the suburban ones, and most satisfactory in those in the country.

Often the only impression that the average city youngster has of bird life, for instance, has been gained through meeting the English or house sparrow in the streets, by watching or listening to the European starling about the church steeples, by seeing the domesticated pigeons which are so often raised on the roofs of city tenements, or by observing the herring or harbor gulls at the water front or from the ferryboats. To be sure, if the youth cares enough about the birds to spend his time in the larger parks he may see numbers of semidomesticated ducks, swans, geese, etc., and not a few truly wild birds, which stop for a time in spring and fall or even remain during the summer to nest. Or he may go to some zoological park or private aviary, both of which, however, are objectionable to a certain degree, and do not furnish the material most desired for the furtherance of the work now under consideration. At the zoological park the majority of beasts and birds, having been brought from distant localities, anywhere from the tropics to the arctic regions, are of great interest, but do not instruct the child in the customs and manners of those creatures which he might expect to find in his immediate vicinity. Again, we must always remember that although much may be learned by watching the birds in the zoological park, so far as plumage and general appearance are concerned, they are existing under unnatural conditions which lead to habits so at variance with their normal activities that these same birds if

[1] Presented January 21, 1911.

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observed in their natural haunts might not be recognized. It is reasonably safe to conclude, then, that the pupil who confines his or her observations solely to the zoological park is very likely to form mistaken and distorted conceptions of animal life.

The aim of nature study is to cultivate a sympathetic acquaintance with nature and to develop the power of observation. The children should be brought into actual contact with the object of study.

The city boy will find some way to satisfy his desires when there is aroused in him an intense interest in nature either through visits to the parks or by reading. He will persuade his father or guardian to accompany him on Saturdays or holidays to suitable localities beyond the limits of the city, where he may ramble among natural woodlands and match his wits against those of the creatures of the fields and forests. But this sort of thing is not always practicable with an entire class of children, for even if the teacher were willing to undertake such an excursion, the plan is by no means to be recommended when birds are the objects to be sought. In the first place, there are likely to be several children in the class who do not have at heart the real interests of the rest of the company, and who are either continually laughing aloud or chattering with those who might otherwise indulge in some serious observations. And, in the majority of instances, even though those in the party should maintain silence, it is absurd to think of studying the timid birds by advancing on their domains in a great army.

In the study of botany it is different: a plant is a fixed object which can be observed and examined as one wishes.

In the suburban districts we have conditions that are so different from those in the city that the school child is in a position to keep constantly in touch with certain of the wild things. In fact there are some birds that seem to prefer these semirural places (where men's homes are not thickly and still not too sparingly distributed) to the more strictly open country stretches. Here the child can put out bird houses of his own manufacture and

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have the satisfaction of seeing them tenanted by bluebirds or wrens. In the winter he can erect a small shelf or food counter and be delighted beyond description by the charming presence of nuthatches, woodpeckers, chickadees, titmice, juncos, etc. But, perhaps best of all, he can observe the birds daily and at all times of the year by walking only a short distance from home; and even while going to and returning from school he may see something of sufficient importance to warrant its being reported to his teacher.

Although we may expect to find the maximum of wild life in the purely rural sections—and no doubt we could discover many a country lad whose ability to name the birds would fill us with admiration—yet it is a fact, perhaps as a result of the very abundance of nature's treats, that many country boys are either not appreciative of the riches of nature or are callous to them. Thus it is that the children of the country take as a matter of course or even treat with indifference those things which their little cousins of the city would be eager to observe and to be told about, but which they are denied through unfortunate circumstances.

But what applies in the city to birds cannot by any means be so uniformly applied to other forms of life. To suit the needs of the general observer, plants grow as well in the botanical garden as they do in the open country. Unlike the birds they are quite constant in habits under the somewhat abnormal conditions produced by man. The trees in the parks, too, although not always the healthiest of specimens, will nevertheless serve the purpose of enabling the pupil to distinguish the various kinds.

When we arrive at the subject of fishes we find the conditions somewhat reversed, for the city boy or girl has at his or her disposal the best of opportunities for observing the members of the finny tribe in the aquarium. And what is true of the fishes is also true of the crustacea (lobsters, crabs, etc.) and of certain turtles, waterbugs, and tadpoles.

In my mind, therefore, nature study in the schools seems to resolve itself into three phases:

1. THE CITY, where knowledge must be gained *in* the class-

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room from books, mounted specimens of birds, etc., and from various other specimens which are kept in a small aquarium in the room or are in some other way available; *outside* of school in the zoological park, the botanical garden, the public parks, the aquarium, and the museum.

2. THE SUBURB, where a happy medium exists. Here the pupils in school possess not only all of the classroom facilities of the city children, but just outdoors can obtain first-hand knowledge which inspires both the teacher and the scholars.

3. THE COUNTRY, where ideal conditions for nature study exist, but where the least use (in many cases) seems to be made of them. I have pointed out one or two slight advantages that the city has over the country, but these are not to be compared with the overwhelming wealth of material that crowds about the very dooryard of the country school.

The desirability of nature study in the schools cannot fail to be recognized, for the future conservation of our remaining natural resources in all three of the great kingdoms depends largely upon the proper education of the rising generation. But unfortunately there seems to be a lack of knowledge on the part of many school teachers and a scarcity of satisfactory books on natural history for practical use in the schoolroom. For instance, about two weeks ago a school teacher called my attention to a small volume entitled Stories from Birdland, written in 1896, which was designed for use in the lower grades. Although the book has for fifteen years been used as a reader in the primary grades, and has no doubt been read by many children in the libraries, yet it abounds in errors of no minor degree, both in the text and the illustrations. Some of these mistakes were so noticeable that I could not refrain from noting them here.

If the author had had any experience searching for the nest of the yellow-breasted chat she would have known better than to state "he is in this bush, close beside his little nest." He is anywhere but beside the nest when anyone is near. And, after the nest is located (if one is fortunate enough to find it), it will be discovered to be not a "little" nest, but quite a bulky one. Speak-

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ing of ducks as being unable to perch on a limb or walk gracefully may be very well for some species, but it cannot be universally applied. For instance, the tree ducks of northeastern South America constantly alight on trees and nest in hollows in them; and our wood duck nests in hollow trees, as do also several other species. As for being awkward while on land, this is so when speaking of the domestic kinds and many wild ones as well, but the green-winged and blue-winged teals are as nimble on the land as they are in the water. And it takes a lively person to capture a young black duck on the run. The illustration of the fishhawk, as well as of many other of the birds mentioned in the book, is miserable, and could scarcely lead to anything but confusion in the mind of the child who might happen to go forth to see things for himself. Imagine being able to tell from a distance (as seems to be the case here) the size of a bird's beak. At the bottom of page 133 the author falls into one of the most common errors of those who do not observe, by stating that the fishhawks were collecting the nesting material in their beaks. On page 140 the author errs by stating that the sparrow hawk builds in an old crow nest. These little hawks invariably deposit their eggs in hollow trees. Although many reports have been received to the effect that children are carried off by the golden eagle, investigation in each case has proved that fancy and not fact was the base of the story. The fact that the author allows herself to make such a statement indicates that she is not qualified to produce a book for the correct education of the child.

I have purposely avoided mentioning here at length the public museum as an aid to nature study in the schools, because I have striven to adhere principally to the subject of living objects. But the museum is one of the most valuable assets of any commonwealth; an intelligent community could no more dispense with its museum than it could do away with its library. The possibilities for school work by having the staff of a museum cooperate with teachers and pupils are unlimited. In its educational exhibits alone a museum finds its justification, to say nothing of the many other functions which it fulfills.

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Conservation, the National Issue[1]

CHARLES LOUIS POLLARD

One may be pardoned for a certain degree of hesitancy in discussing a subject widely exploited in the press and on the platform, and more or less familiar to everyone aiming to keep pace with the trend of modern affairs. Conservation of natural resources, as a phrase, has indeed become the watchword of the times, and opportunely, for until the principle of conservation becomes a fixed public policy, the execution of which is insured by proper state and federal laws, we shall have with us always that economic menace known as the increased cost of living, which we strive feebly to avert by pitifully inadequate means. Tariffs may come and go, special taxes of one kind or another may be enacted, farms may be abandoned or renewed; but there can be no permanent betterment of existing conditions until we humbly recognize that man cannot dispense with the good gifts provided by nature, that he must use these gifts wisely, judiciously, and must conserve them by every means within his power. Civilization has effected to a wonderful degree the mental and moral advancement of the human race, and we are constantly discovering new methods of harnessing the forces of nature for our benefit. We have no reason to suppose that man will be mentally retrogressive in the further course of evolution; and if we are the predecessors of a race possessing superior mental endowments, is it unreasonable to suggest that we should strive to preserve from utter barrenness the earthly heritage of future generations?

Conservation is a broad and elastic term. It may be held to include the preservation not only of such natural resources as

[1] Lecture delivered before the Men's Club of Forest Hill, N. J., January 1911. Presented at the meeting of the Association February 18, 1911.

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are of direct economic benefit to man, chief among which are the forests, coal and mineral deposits, fur-bearing animals, etc.; but also of other natural gifts whose value to the human race may be less obvious, but which are none the less important in preserving that delicate adjustment between organized and unorganized life known to biologists as the balance of nature. Various public and private organizations have therefore come into existence, since the conservation movement assumed a national importance, having for their aim the education of the people in this phase of the subject. The Audubon Society, the two societies for the protection of native plants, field and outing clubs, and various civic organizations are accomplishing excellent work for the cause. Nor should such activities be regarded lightly when they happen to be concerned chiefly with the esthetic aspect of conservation. If we admit the value of the fine arts as an educational factor in our intellectual development, we must also recognize that true art finds its best expression through natural inspiration. Thus, the plant and animal life of field and woodland play a more important part in our own existence than the mere political economists would have us believe. As a scientist I have no sympathy with the doctrine that the earth was made for man alone, and that the sole aim of human knowledge and endeavor is to minister to his needs. Man is merely a marvelously developed organism amid a host of minor organisms, the capstone of the great arch of evolution. He is surrounded on all sides with the wonderful pages of the world's geological and biological history, and a thousand untouched fields of activity are open to him. Yet there are hosts of people whose attitude toward man's function on the earth and his relation to the rest of nature may be summed up in the old saying, "Let us eat, drink and be merry, for tomorrow we die." Such as these would employ natural resources for the best interests of the present generation, leaving future generations to take care of themselves. They would waste no time in the study of what is not of practical use to mankind, having abiding faith in human ingenuity to provide substitutes for exhausted natural commodities.

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I trust that I may not be accused of undue sarcasm in my view of this philosophy, but it finds expression in so many ways that it must be reckoned with as part of the public attitude toward the conservation question, and it is for this reason that we are constantly obliged to emphasize the practical side of facts and statistics, and that appeals based on considerations of sentiment or esthetics have very little weight with our people. I shall limit myself, in the remainder of my address, to a discussion of forestry problems, for there is no doubt that from every standpoint this aspect of conservation is of paramount importance and interest.

In the variety and extent of its hardwood forests the United States originally surpassed every other country of similar magnitude. These forests were of five more or less well-defined types. The northern forest extended as a belt through northern New England, New York and part of Pennsylvania, across the region of the Great Lakes to Minnesota, with an extension in the higher Alleghenies as far south as Georgia. It was composed principally of coniferous trees, chief among which was the white pine, but it included also among hardwoods, birch, cherry, and sugar maple.

The southern forest became manifest in southern New Jersey, and extended thence southwestward in a belt of increasing width, covering the south Atlantic and Gulf States, as well as the eastern portion of Texas, part of Arkansas, and southern Missouri. In this forest the long-leaved or yellow pine predominated, and in suitable localities occurred stands of gum, cypress, oak, magnolia, and many other hardwoods of minor importance. Between these two regions stretched the great central forest, in which the most valuable of our American hardwoods attained their maximum size and development. It included oaks of various kinds, walnut, hickory, elm, maple, cottonwood, basswood, white poplar, chestnut, sycamore, ash, red gum, and many other species.

Separated from the eastern forests by the broad area of the Great Plains, the Rocky Mountain forest followed the general

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trend of the mountain range from which it was named, growing chiefly on the higher plateaus and slopes. It was almost entirely coniferous, being composed of western yellow pine, lodgepole pine, Douglas fir, larch, spruce, and other trees, and was limited to the westward by extensive desert areas in Arizona, Nevada, Utah, Oregon, and Idaho. It was then replaced along the Sierras and in the Cascade ranges by the Pacific forest, which was also of the coniferous type, and included redwood, sugar pine, western red cedar, Douglas fir, and various other pines, firs, and spruces.

I have used the past tense in speaking of these forests, for the reason that as the settlement of the country has progressed they have been so much reduced by cutting, clearing, and fire as to be but remnants of their former luxuriance. It is estimated that the virgin forest of the United States covered 850 million acres and contained 5,200 billion board feet of saw timber. The latest government report (1909) that I have examined, gives the present acreage as 550 million, with a total stand of 2,500 billion board feet. The heaviest reduction is to be observed in the central forest, where the present stand is only one fifth of the original. This is to be expected, in view of the fact that the hardwood forest of the Central West occupied a soil of great agricultural value, and was consequently rapidly cleared to make room for farms. The Pacific forest, on the other hand, owing to its comparative inaccessibility and the cost of freightage to eastern lumber markets, still occupies 90 per cent of its original area and includes 80 per cent of the original stand.

With these facts in mind, our next inquiry is how long the supply of timber in this country may be expected to last. The figures on this subject are not altogether satisfactory, owing to the uncertainty of various factors which must enter into consideration in the calculation of estimates. We know, for example, that the annual cut of timber for all purposes averages about 50 billions of board feet, of which four fifths are used for lumber and the rest is devoted to other purposes, such as pulpwood, shingles, cooperage stock, veneer, poles, distillation, etc. But we can

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obtain no satisfactory data upon the quantity of hardwood used annually for fuel, or upon the losses occasioned by fire, destructive storms, or such industries as that of turpentine manufacture in the South, which results in the death and waste of many trees. The most conservative estimate of the consumption of wood through these various agencies is 50 billions of board feet, which with the timber cut already mentioned brings the total to 100 billions consumed yearly. It is safe to say that the annual growth of our forests does not exceed 60 board feet per acre. This means that the amount of wood used every year for lumber alone is greater than the annual amount produced by the growing forest; that the annual consumption is, in fact, three times the annual growth.

It was stated that the total present stumpage was placed at 2,500 billions of board feet. If the rate of consumption above indicated does not increase, and if the annual growth continues in the same ratio—both of which suppositions are highly improbable, if we judge from past and present conditions—the timber supply in this country will last 35 years. A very slight disturbance in the above ratios will reduce the time limit to an alarming degree.

We can scarcely overestimate the serious results of an exhaustion of our wood supply. It is true that invention and applied science are constantly furnishing us with adequate substitutes for wood in many manufactures. Modern buildings of brick, stone, cement, and steel, being fireproof, are infinitely superior to the old houses of wood. It has been found that ships, railway coaches and ties, and many kinds of furniture may be made to advantage of steel; while numerous household articles formerly classed as woodenware are now of metal or papier-maché. But no satisfactory substitute has been found for wood pulp in paper manufacture, and the total output of cotton and linen rags, once the exclusive source of paper, would scarcely be sufficient for the daily press of one of our large cities.

The modern fireproof building still requires large quantities of

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lumber for interior trim and finish. Failure of the turpentine supply would cause an enormous increase in the cost of paint, varnish, and allied commodities. But the most serious result of the exhaustion of our timber would be the scarcity of fuel. The coal supply is steadily waning, and there are vast sections of the country in which the price of coal is practically prohibitive, so that wood is still the only fuel for domestic and even manufacturing purposes. While it is possible that some utilization of peat deposits may yet be made, as in various European countries, wood will continue to be burned so long as there is any of it left; and it must be remembered, moreover, that mere brushwood is of little utility for this purpose, and that while dead or fallen trees may be cut for firewood, by far the largest portion of the amount annually consumed, under present conditions, consists of otherwise marketable hardwood lumber.

We cannot depend upon other countries for relief. The hardwood forests in Canada are of limited extent, and the softwoods are being rapidly depleted to yield food to the pulp mills, about eight million cords being imported annually by the United States, in addition to the quantity consumed at home. Tropical hardwoods must always remain high priced, owing to the difficulty and expense of lumbering, hauling the logs to a seaport, and freighting them to this country. A review of these considerations proves, therefore, that if we are to avert the total destruction of our merchantable timber within the next century, we must devise a means of reducing waste from all causes to a minimum, and of so managing the forests as to insure a total annual growth or renewal in excess of, or at least equal to, the annual consumption.

I wish to emphasize here my belief that apart from sentimental considerations, the prospective failure of the wood supply is the only practical and logical basis for the conservation movement as applied to forestry. Much has been written and said as to the relation of forests to climate and water supply, as also of the danger from floods in deforested regions. I think the importance of the first theory is very generally overestimated.

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This phase of the subject has been exhaustively treated by Professor Willis L. Moore, chief of the Weather Bureau, and a summary of his conclusions may be of interest, as tending to disprove certain very widely circulated impressions. He points out that climatic changes are slow, extending through long periods of time, and that increase or diminution in the forest area is the result, not the cause, of such changes. This is shown by observation of conditions in such high latitude countries as Alaska, where the density of the forest has not been appreciably diminished although the climate has undergone a gradual change, due to the retreat of the glaciers. In desert regions the existence of dead forests, often petrified, as in New Mexico and Arizona, indicates that the climate became arid long before the forest succumbed. Certainly in these cases no human agency could have compassed the destruction of the forests and by this means converted the land into a desert.

It has been observed that rain gauges placed in a forest always catch more water than those exposed in open fields. This might seem to indicate that precipitation is greater on such areas, but as a matter of fact, the construction of the gauges is such that when sheltered from the wind they invariably catch more rain drops. This accounts wholly for the differences in record between the two situations. So also, while the temperature of a forest is lower and its relative humidity higher than in an adjoining field, this is purely a local condition, and the general climate of the state or even of the county in which such a forest was situated would not be appreciably affected by its removal. In other words, destruction of the forests cannot be said to result in any marked decrease in precipitation or any alteration in the mean annual temperature; and this is amply demonstrated by the records of the Weather Bureau. In the Ohio Valley, for example, where deforestation has been extensive, the curve chart covering a period from 1834 to the present time shows a steady average, while in New England, where deforestation began even earlier in our history, there has been an actual increase in precipitation during the same period.

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Turning now to the question of the effect of forests on floods, we find the problem complicated by a number of important factors. The volume of water that enters the springs and tributaries of rivers is dependent upon the nature and character of the soil, upon the general climate of the region, and of course upon the total amount of precipitation. Its movement is determined by gravity, resulting from the degree of elevation and by the condition of the channels. In a comparatively level country, as Professor Cleveland Abbe has pointed out, floods may occur in every small tributary, and yet these floods may so enter the main channel as to cause only a gentle rise, while in other cases in similar regions the small floods may produce a deluge in the main channel, entirely irrespective of the extent to which the surrounding watershed may be forested. It is probable, moreover, that rich loamy soil under cultivation is almost equally as good a conserver of the rainfall as the porous leaf mold of the forest floor, since the latter, when saturated, is apt to part suddenly with its moisture, with a disastrous flood as the result.

We may conclude, therefore, that if all or most of our forests lay upon level or gently sloping areas, lumbering operations would have little effect upon the spring floods. As a matter of fact, however, we have already seen that they are now practically confined to the slopes of mountain ranges, and here I am convinced from personal observation, that their removal is attended by serious results. The southern Alleghenies in North and South Carolina afford examples of all stages of denudation. When the forest is lumbered, every tree is cut down, the marketable ones sent to the sawmill, the others converted into firewood. When a mountainer wishes to start a farm or pasture, he cuts out the small trees for fuel, and girdles the large trees. Within a year or two the latter are dead, and the ground is then burned over to consume the brush and reduce the stumps. In either case the result is the same when the slope is steep. Heavy rains first wash away the surface coating of humus and then gradually dispose of the top soil, exposing the bare rock beneath, or, in a clay

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region, scoring unsightly furrows and deep gorges in the surface, which then bakes hard in the sun. Such wood lots are unfit for cultivation within a few years; but the wasteful process continues, as the mountaineer seeks only pasturage for his cows, and lumber has little value in his eyes. I have seen solid white oak trees two feet in diameter standing like unsightly skeletons in a mountain forest that had been thus wrecked.

When we pass to the consideration of what has already been accomplished along the lines of practical conservation, we cannot fail to be impressed with the fact that it is largely due to the wisdom, foresight, and persistence of one man, and to the courage and tireless energy of another. Whatever opinion may be held of the unfortunate controversy which deprived the federal service of one of its most able officials, and however we may differ on questions of policy in forest management, the credit for making conservation a vital issue before the people must be awarded to ex-President Theodore Roosevelt and Mr. Gifford Pinchot. The latter succeeded, as chief forester of the Department of Agriculture, Dr. B. E. Fernow, who is often called the father of American forestry, and who was the first to demonstrate the value of scientific methods as applied to forest management and to call public attention to what had already been accomplished in this direction in Germany and France, where the conservation problem was equally serious. Thus the seeds were sown of that mighty crop which Dr. Fernow's successor nurtured and brought to maturity; and one of the smallest divisions in the Department of Agriculture has now become one of the most important of its bureaus, employing a field force alone of over 2,000 men.

Mr. Roosevelt, as is well known, was always an active supporter of Mr. Pinchot's policies. He made extensive additions to the national forest reserves, and the wonderfully rapid development of the Forest Service since 1900 has been due in large part to his powerful influence.

In 1909 the reserves included a total acreage of 194,505,325, of which over 27,000 had been added during the previous fiscal year.

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The largest acreage is in California, with Alaska as a close second. It is a matter for regret that with the exception of Florida, there is no state land east of Michigan containing a national reserve, although there is imperative need of protection for the still extensive forests of the southern Alleghenies. The lack of an Appalachian reserve is deplorable, but there is hope that Congress may yet intervene to save this noble mountain area from devastation.

Since the national forest reserves are located chiefly in the far western states, it is natural that the question of their further extension and the problem of administration should become a political issue in that section. The West has been more or less unjustly accused of being unfriendly to the conservation movement. But we must bear in mind that the thickly settled East has passed through a historical experience upon which the West, in spite of its phenomenal development, is but just entering. As I have already indicated, the early American colonists settled in the midst of a virgin forest of wonderful variety and luxuriance. In the period of interior colonization following upon the Louisiana purchase, the forests were rapidly cleared to make way for farms and villages. Timber was so abundant, and the area of the country so vast, that none could foresee a possible exhaustion or even scarcity of the supply. Hence it often happened that homestead sites were selected in regions unsuitable for agriculture, only to be abandoned after the woodlands had been destroyed. In such cases the land usually reverted to scrub, or inferior forest, and all possibility of further commercial development was lost. If the early settlers could have been endowed originally with that foresight and judgment which is unfortunately gained only by sad experience, they would have selected for cultivation those lands in which the tree growth indicated a soil of great richness and productivity, leaving the forest elsewhere untouched as long as possible; and the history of New England and the Middle States would not then have told a tale of neglected homesteads and abandoned farms. As Pinchot has pointed out, a mistake

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of this kind would be far more serious in the West, because in dry climates the forest is much more easily destroyed; and even in the case of land adapted for cultivation, if it happens to be covered with a stand of young timber approaching marketable size, clearing at the present time would be like withdrawing money from a savings bank a few days before the interest falls due.

But it must be remembered that the West is now the land of home seekers. It needs settlers to develop its resources, and it wishes to encourage them by every possible means. It is therefore scarcely surprising that the western public, not yet fully educated in the lesson of experience which the East has learned, nor perhaps quite realizing the importance of conservation as a national policy, should look with impatience upon the withdrawal of vast tracts of timberlands by the federal government, and should even consider such withdrawals as an infringement of state rights. In an address recently delivered before the Brooklyn Institute of Arts and Sciences, Senator Borah, of Idaho, presented the western viewpoint with considerable skill. He pointed out that every year thousands of men, repelled by the difficulties of profitable farming in many western states, are moving to Canada, where they can obtain homesteads to better advantage, and where agricultural operations in the vast wheat-growing areas are certain of success. He considered the national forest reserves responsible for this condition of affairs, in view of the fact that they include large tracts which, when cleared, are preeminently suitable for cultivation; and he argued, on behalf of the western states generally, that while the establishment of national reserves is desirable on general principles, the areas thus segregated should not include potential agricultural land. I am inclined to think there is force in this argument. It is well known that our farms do not keep pace with the needs of our growing population, and yet our grain fields might be large enough to supply foodstuffs in plenty, without recourse to other countries. In the West, therefore, it would be the best policy, from the standpoint of national economy, to encourage settlement in every possible way, to pro-

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mote agricultural operations, and not to allow a slavish adherence to the mere theory of conservation to interfere with the practical execution of common-sense ideas. In this connection it should be a source of gratification that under irrigation it has been found possible literally to make the deserts blossom like the rose, and since the conversion of these deserts into arable land means practically the addition of so much capital to our working resources without in any way conflicting with the demands of conservation, the benefits of irrigation should be extended in every possible way.

I propose to touch very lightly on the question of federal versus state control of the national forest reserves. It is based upon that greater problem of federal as opposed to state rights, a problem around which all political theories have centered since the establishment of the republic, and which is certain to remain a compelling issue, in one form or another, so long as our present form of government shall endure. The advocates of broader federal authority are committed to the general policy of centralization as a natural corollary. Those who favor state control, on the other hand, are usually disciples of the Jeffersonian school, though not necessarily allied with the Democratic party of the present day. While open to conviction on the subject, I believe that the best practical results can be secured by a judicious cooperation between state and federal authorities in working out the complex problems presented by the management of these reserves. It is highly desirable, of course, that whenever certain principles or conditions are of universal application, they should be safeguarded by federal laws. Thus protection from fires, which is really the chief pillar of the conservation movement, is well provided for under the present system of employing forest rangers and guards. In the year 1908, when disastrous fires worked havoc throughout the country, the national forests suffered relatively little, a fact which testifies to the efficiency of the service. Three states, Oregon, Washington, and California, have rendered effective cooperation in this work by commissioning the federal

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officials as state fire wardens, thus enabling them to extend their jurisdiction over adjacent forested areas.

Many of the reserves are at the present time in need of serious attention. The policy of the government is to cut the timber, not in the reserves containing the largest stand, but in those where the need of the community is greatest and the market consequently higher. Thus in the easternmost reserves there is a steady demand for timber, which can be easily transported by convenient railroads to the non-timbered regions still farther to the eastward. On the other hand, the largest supplies are located far to the west, in regions where there are also extensive private holdings awaiting a market. As a result, these western reserves contain a large amount of timber annually wasted through passing its prime and undergoing decay. In California less than one half of one per cent of the timber in the reserves of that state was cut for sale in 1908. This is not a wise policy, and it is sure to result in injury to the reserves. As soon as timber reaches a marketable size the best forestry practice requires that it should be removed to make way for younger growth. Thus the forest is constantly renewed, and may be made to yield a good interest on the national investment, the amount being increased by the sale of stock-grazing permits and other privileges. There is reason to believe that the sales of timber from the reserves will constantly increase as the Department of Agriculture gains experience in the introduction of sound business methods, and it is a fortunate circumstance that the law of 1905 to a large extent safeguards the reserves from the entry of speculative homestead claims. It may be argued that the government should not enter the lumber business, but should leave the exploiting of its timberlands to private owners. The obvious reply to this is that governmental control alone will save the forests from immediate conversion into cash and insure the preservation of forest products for future generations.

Reforestation is a subject of great importance, whether viewed from the public or private standpoint. Modern forestry has

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proved that otherwise unprofitable areas may be converted into timberland affording profitable returns within a reasonable time. It has also shown that to a limited extent tree planting can be carried on in the plains, even without irrigation; and the allied science of botany has aided in the selection of the species best adapted to any given situation or requirement. Reforestation is also practicable in connection with the national reserves; for at the present time they include many barren areas resulting from repeated fires or indiscriminate cutting or grazing, and these, unless artificially planted, will never become reforested. The government is pressing this work to the extent of its resources, having already established about twenty-five nurseries for the production of growing stock. This number is entirely insufficient, and it would seem that here is an excellent opportunity for active cooperation by the various states concerned. If each state were to establish such nurseries as might be required for the growing of stock to replenish and reforest the national reserves lying within its borders, such work to be performed under the supervision of the state forester, it would leave the federal bureau free to use all its resources for the administration and care of the reserves.

As it is the duty of the government to encourage the development of farm lands in the West, even at the sacrifice of some timber, so in the East, where farming on a large scale is no longer profitable, it should offer every inducement to private owners of large tracts of woodland to administer them according to modern forestry methods. The federal bureau has accomplished much good in this direction by giving expert advice and instruction and even supplying materials free of charge. But the states are hampering the work of conservation by the excessive taxes that are levied on timberlands, making it unprofitable for the land owner to hold them as an investment. Such taxes, out of all proportion to land values, have done much to retard the development of economic forestry. In many European countries a small tax is levied on the land itself and the products thereof are taxed only

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when harvested. Such a system, as applied to timberlands, is far more just and equable than the methods now employed in this country. Another European custom which we would do well to adopt is that observed in certain parts of Germany where forest areas are extensive. Private owners are required to deposit the cost of replanting their land at the time of cutting the timber, and in case of failure to replant within a certain period, the work is done by the government and the deposit forfeited. This is in line with the very general policy of the German provinces to keep the total forest acreage at the same figure and to replace such lands as may be required for agriculture with newly reforested tracts. This is a wise and beneficent use of natural resources and is in strict conformity with the principle of true conservation.

Finally, let me urge the importance of educating public opinion and of guiding it in the right direction.

Civic organizations can accomplish much good among the people, not only by means of public meetings and contributions to the press, but through direct personal influence. I do not think the most earnest advocate of conservation fully realizes the value of individual effort. So also our museums can wield a mighty influence if their curators will devise methods of teaching the lesson of conservation through the medium of exhibits. A conservation exhibit has been planned for the Staten Island museum consisting of four models, on a suitable scale, showing a mountain slope in the southern Alleghenies under successive changes as a result of human interference with nature. The original forest will be seen, in miniature; then the area will be shown after the trees have been girdled, and subsequently fire-swept; and the last model will exhibit the final results of denudation, burning, and exposure to heavy rains. These models will be supplemented by colored photographs showing native wild flowers, the weeds that follow cultivation, and the vegetation that occupies recently burned tracts. These are intended to appeal to the esthetic side of conservation, just as the more realistic model will appeal to the utilitarian.

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It is to be noted that liberty of expression, the most cherished feature of a popular government like our own, sometimes results in obscuring the real issue. For example, business depression and the increased cost of living have served as the foundation for attacks upon the corporations, bitter denunciations of capitalists, and ill-judged criticism of certain fundamental requirements of the Constitution. Yet those who adopt this course are either wholly silent about the tariff or deprecate a reduction of duties on the ground that the very business interests they are attacking will suffer. So also, the real issues of conservation are obscured, on the one hand, by those who demand that the country should be given over to agriculture, and on the other, by sentimentalists whose sole motto is, "Woodman, spare that tree." Forestry teaches us that the only wise course, whether viewed from the standpoint of national benefit or in the light of our own duty to posterity, is to conserve the tree until it reaches a maximum size and value; to sacrifice it then for the needs of the community, and either to replace it at once, or to cause the land upon which it has grown to yield even greater returns. Thus we make the best use of nature's gifts during our own brief lifetime, and pass them down unimpaired and even multiplied, to the wiser and better race that may henceforth rule upon the earth.

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Our Forest Trees[1]

Carl Philip Dowell

From the time when the first settlers came to this country up to this time we have had an abundance of forest trees or immense tracts of forest lands, but now the forests are rapidly disappearing. If the indiscriminate cutting of trees keeps on as it is, we will soon have a forest famine. The most valued tree in the life of the nation is of course the forest tree. The tree standing alone in the schoolyard and along the road please the eye and cool the air with shade, but the forests where wood is growing for homes and fuel have many industries. There the litter is keeping the water to quench men's thirst, to irrigate their lands, to drive their mills, and to make the deep waters for inland traffic.

Trees serve many useful purposes in the life of man, some producing the litter so valuable for water. The litter sometimes enriches the soil; a number of trees serve the purpose of shade and ornament; the red cedar and white pine are fine trees for shipbuilding; some trees are good for timber. Many uses have been made of trees for the home and farm. General construction wood comes from trees like the Scotch pine and others; white pine makes good woodenware; house lumber is produced from the red pine; cabinet work comes from maple, mahogany, etc.; Norway spruce produces our paper pulp; sugar maple produces sugar, beside wood for veneering purposes. For the farm shagbark hickory produces wood for agricultural implements, white oak makes fine wood for vehicles, and locust produces suitable

[1] Essay written by a boy of thirteen and presented, together with a collection of herbarium specimens of trees, in competition for the annual prize in natural science offered by this Association to pupils in Curtis High School and awarded June 28, 1909. (See Proc. Staten I. Assoc. 3: 49. 28 Ap 1911.)

The publication committee has recently decided to include in the Proceedings such essays when they are deemed suitable for publication.

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posts to enclose the farm. When communications by wire are desired telephone poles can be made from tamarack, cedar, and the like.

The best trees for shade are those that have a thick broad crown and dense foliage, which keeps the sun's rays from penetrating to the ground. Sometimes a shade tree is used as a nurse tree in forest plantations, as is the case with the black cherry. The basswood is a fine tree for planting along the road and about the home on account of its dense foliage and large crown. The tulip tree is an excellent tree for shade and ornament, and is especially suitable for these purposes where bituminous coal is used. Many other trees are used for shade and ornamental purposes. Some of these are the Norway spruce, black cherry, maples, basswood, elm, box elder, beech, poplar, sassafras, white and red oak, horsechestnut, hemlock, sweet gum, ash, and hickory. The Norway spruce grows rapidly, thus its use for shade. The honey locust makes an excellent street tree and its use for this purpose in western towns is increasing. The luxuriant foliage and rapid growth render the elm suitable for planting in parks and along roadsides. As a lawn and street tree the box elder is a fine tree because of its hardiness. Of all our native maples the sugar maple is the best shade tree, although surpassed by the Norway maple.

For memorial purposes any tree is suitable that is sure to thrive with natural conditions, live to great age, and have good form. For these purposes the tulip tree, poplar, spruce, hemlock, maple, oak, horsechestnut, ash, black walnut, Scotch pine, etc., are suitable. For Arbor Day planting the best trees are those that grow rapidly and are suitable for growing on any land at all. A fine tree for Arbor Day purposes is the tulip tree, because it proves suitable wherever natural conditions are at all favorable, and because of the rapid growth and magnificent form at maturity, and the value of its wood. White elm grows on any soil and can endure a great deal of heat and moisture. Others well suited for Arbor Day are the Norway spruce, European larch, Scotch

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pine, white pine, tamarack, cedar, chestnut, hackberry, basswood, ash, box elder, hardy catalpa, elm, white willow, black walnut, Osage orange, and coffee tree. The white pine, Scotch pine, tulip tree, elm, Norway spruce, sugar maple, red maple, white oak, red oak, ash, white birch, chestnut, shagbark hickory, and beech are about the best for Arbor Day purposes.

Trees are being cut down faster than they are replaced. The fall webworm and other insects are doing great damage, and in a few years many of our forest trees will disappear if we do not protect them, restore the birds and destroy the insects. We may help to do so by killing off the English sparrow and by taking special precautions against the insects. This also applies to our shade trees. Fire is a great enemy of the forest, but it can be partly prevented by piling up the brush, by thinning growths of trees, and by clearing trees from the vicinity of railroads. When the trees are cut down a sufficient number of trees should be planted to replace them. But in the first place the trees that are growing should be preserved if possible.

In the PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES, Vol. I, page 107, it reads that a committee was appointed to report on the subject of destruction of our native vegetation and to suggest any measures to preserve the plants. So far, nothing further has been done. If no more interest is taken to preserve the little patches left, the woods of Staten Island are doomed to destruction. Extensive cutting of our forest trees has been going on recently on Staten Island; for example, along Bradley Avenue, South Avenue, Darcey's woods, New Springville, and Richmond. If this destruction be allowed to go on, the beauty of our Island will be destroyed and it will be a much less desirable place for living. Much can be done to preserve street and forest trees by appointing watchmen to guard against fires and in every way preserving the trees we have. One of the precautions that could be taken would be to have the electric power for cars underground instead of overhead.

We have no large parks on Staten Island, but we ought to have

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a large and natural park, and now would be the best time for obtaining such a park, before all the natural forests are gone. New York City has its Central Park and Bronx Park, Brooklyn has its Prospect Park and others, but what has Staten Island? Silver Lake Park is very small in comparison with the others, since it extends only about one hundred feet west of the lake. If we had all the woodland adjoining the lake we would have at least one respectable park. What we need to do on Staten Island is not to try to plant trees on cleared tracts of land, but to try to preserve our magnificent tracts of woodland before they are cut down.

"What does he plant who plants a tree?
He plants the friend of sun and sky;
He plants the flag of breezes free;
The shaft of beauty, towering high;
He plants a home to heaven anigh
For song and mother-croon of bird,—
In hushed and happy twilight heard—
The treble of heaven's harmony—
These things he plants who plants a tree.

"What does he plant who plants a tree?
He plants cool shade and tender rain,
And seed and bud of days to be,
And years that fade and flush again;
He plants the glory of the plain;
He plants the forest's heritage;
The harvest of a coming age;
The joy that unborn eyes shall see—
These things he plants who plants a tree.

"What does he plant who plants a tree?
He plants, in sap and leaf and wood,
In love of home and loyalty,
And far-cast thought of civic good—
His blessing on the neighborhood
Who in the hollow of His hand
Holds all the growth of all our land—
A nation's growth from sea to sea
Stirs in his heart who plants a tree."

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Records of Meetings

Regular Meeting, October 15, 1910

The meeting was held in the Museum, Borough Hall, New Brighton, President Howard R. Bayne in the chair, and fifteen persons present.

The minutes of the annual meeting of May 21, 1910, were read and approved.

The committee appointed to award the annual prize in natural science, offered by the Association to pupils in Curtis High School, made the following report:

The subject for competition during the schoolyear 1909–10 was "a collection of not less than fifty Staten Island insects of economic importance, including at least twenty-five species," with a brief statement of the special economic interest attaching to each species.

Two collections were submitted in competition. While neither of these was quite up to the requirements of being confined to "insects of economic importance" or in being completely labeled in accordance with the prescribed conditions, the committee decided that the collection submitted by Louis H. Achilles was deserving of the prize, in view of the diligence shown in having made a collection of specimens far in excess of the required number, and in the care shown in mounting them.

The prize was, therefore, awarded to Master Achilles.

The subject and conditions determined upon for the year 1910–11 are:

Subject

An essay of not less than 1,000 words, giving an account of some Staten Island brook, and describing (1) its source, (2) its geographic course, (3) the character of the country through which it flows, (4) discussion of special physiographic features, such as erosion, rapids, falls, etc., (5) fauna and flora observed along its course, (6) historical facts, if any, connected with it.

Conditions

The essay should be neatly written in ink, on one side of the paper only, not rolled or folded, and must be handed to the principal of Curtis High School on or before June 1, 1911.

Note

The committee reserves the right to retain any essay which it may deem suitable for publication.

Charles L. Pollard,
William T. Davis,
Harry F. Towle,
Committee.

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Dr. Arthur Hollick read a paper on Changes and Inconsistencies in the Spelling of Local Place Names by the United States Geological Survey (printed in full in this issue, p. 109), and offered the following resolution, which was adopted:

Resolved, that the Board of Trustees be requested to instruct the publication committee to preserve, as far as possible, the origin and meaning of local place names in the spelling of the same, wherever any such names may appear in any of the publications of the Association, and to adopt a uniform code of nomenclature for all such names in all papers submitted for publication.

The curator-in-chief called attention to the fact that the Association was represented in the City Budget Exhibit and urged the members to visit the exhibit.

The secretary made a brief report on the instalation and arrangement of the material representing the Association.

SCIENTIFIC PROGRAM

Mr. William T. Davis exhibited specimens and read a paper entitled Miscellaneous Observations on the Natural History of Long Island, N. Y. (Printed in full in this issue, p. 113.)

Dr. Arthur Hollick exhibited a note, written and signed by Aaron Burr, which reads as follows:

NYork 8 Nov. 1803

W^m^ P. Van Nefs Esq^e^

Pay John L. Tillinghast Two hundred and thirteen dollars and charge the fame to

—your obt—

Doll^s^ 213— A, Burr

Recd the above in full

John L. Tillinghast

New York Nov. 8—1803—

[indorsed]

A. Burr drft in

favor of Tillinghast

In connection with the note Dr. Hollick presented the following memorandum:

This document came into my possession in a somewhat peculiar manner. At the Buffalo meeting of the American Association of Museums, last summer, one of the sessions was held at the Museum of the Buffalo Historical Society. I happened to be conversing with Dr. Charles F. Millspaugh, of the Field Museum of Natural History, who casually showed me the

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document and remarked that he thought of offering it to the Buffalo Museum. I at once suggested that Aaron Burr was probably more prominently identified with Staten Island than he was with Buffalo, and that it would be a welcome and valued addition to our local historical relics.

The note was evidently made and signed by Aaron Burr and the acknowledgment of receipt by John L. Tillinghast. The indorsement appears also to be in Burr's handwriting, but may have been by someone else.

The special event of local interest in connection with Aaron Burr was his death, on September 14, 1836, in the old Continental Hotel at Port Richmond, an account of which, by Ira K. Morris, may be found in the *Staten Islander* for September 3, 1910.

Dr. Hollick also exhibited and commented upon a collection of quartz crystals, from the limonite deposits on Todt Hill, recently collected and presented to the association by Mr. Bradish J. Carroll.

Mr. L. W. Freeman exhibited and presented a peculiar perforated stone, apparently an artifact, found about four feet below the surface in undisturbed sand, in an excavation made for a sewer basin on Richmond Avenue, Arrochar.

Mr. Freeman also exhibited and presented two arrow points, collected at Mariners Harbor.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 19, 1910

The meeting was held in the Museum, Borough Hall, New Brighton, President Howard R. Bayne in the chair, and about ninety persons present.

On motion the reading of the minutes of the meeting of October 15, 1910, and the transaction of business were dispensed with.

SCIENTIFIC PROGRAM

The program for the evening was arranged by the Section of Biology.

President Howard R. Bayne introduced the speaker of the evening, Professor Henry E. Crampton, of Columbia University, who delivered a lecture on Volcanos and Their History in the South Seas.

The lecture was illustrated with stereopticon views provided by the lecturer and projected by means of a stereopticon under the management of Mr. Charles A. Ingalls.

On motion a vote of thanks was tendered to Professor Crampton for his courtesy in delivering the lecture, and to Mr. Ingalls for the use of and management of the stereopticon.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 17, 1910

The meeting was held in the museum, Borough Hall, New Brighton, President Howard R. Bayne in the chair, and about thirty persons present.

The minutes of the meetings of October 15 and November 19, 1910, were read and approved.

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The President announced that the city had leased, for a term of five years, the house No. 154 Stuyvesant Place, New Brighton, for the use of the Association, and that the Board of Trustees were making the preliminary arrangements to move the museum collections and library into the new quarters as soon as possible after January 1, 1911, when the term of the lease begins.

The secretary stated that the Board of Trustees, at a meeting held on December 3, 1910, had adopted a resolution recommending that the number of trustees be increased to twenty-five and that in the event of such increase being authorized the number necessary for a quorum be increased to eight. The president explained the object of the resolution.

The following resolution amending the constitution was then submitted:

Resolved, that Article II of the Constitution be amended so as to read: The management of the affairs of the Association shall be vested in a board of twenty-five trustees, composed of twenty-three members elected as provided in the by-laws, together with the President of the Borough of Richmond and the District Superintendent of Schools in said borough for the time being, as ex officio members.

SCIENTIFIC PROGRAM

The program for the evening was arranged by the Section of Art.

President Howard R. Bayne introduced the speaker of the evening, Dr. Bruno Roselli, who delivered a lecture on Political and Religious Art in Medieval Siena, illustrated by stereopticon slides under the management of Mr. Charles A. Ingalls.

On motion a vote of thanks was tendered to Dr. Roselli for his courtesy in delivering the lecture and to Mr. Ingalls for the use and management of the stereopticon.

The meeting then adjourned.

REGULAR MEETING, JANUARY 21, 1911

The meeting was held in the St. George branch of the New York Public Library, First Vice-president William T. Davis in the chair, and twenty persons present.

The minutes of the meeting of December 17, 1910, were read and approved.

SCIENTIFIC PROGRAM

Miss Agnes L. Pollard read a paper on The Museum in Its Relation to Children.

Mr. Howard H. Cleaves read a paper on Possibilities and Limitations of Nature Study in the Public Schools. (Printed in full in this issue, p. 123.)

Mr. Charles L. Pollard related some amusing incidents in connection with children visiting the museum.

Mr. William T. Davis read a paper on The Seventeen-year Cicada on Staten Island between the Years 1894 and 1911, illustrated by specimens. (Printed in full in this issue, p. 120.)

The meeting then adjourned.

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REGULAR MEETING, FEBRUARY 18, 1911

The meeting was held in the St. George branch of the New York Public Library, First Vice-president William T. Davis in the chair, and about thirty persons present.

In the absence of the acting secretary Mr. Charles L. Pollard was elected secretary pro tem.

The minutes of the meeting of January 21, 1911, were read and approved.

SCIENTIFIC PROGRAM

Mr. Charles L. Pollard delivered an address on Conservation, the National Issue. (Printed in full in this issue, p. 128.)

Mr. Wm. T. Davis exhibited four milk snakes, *Ophibolus doliatus triangulus* Daudin, found lying dead in the road that runs along the northerly side of St. Andrews churchyard on December 27, 1910. They had probably been killed in the cemetery and thrown into the road. One of the snakes was a trifle over 3 feet 6 inches in length, which is above the average for the species. The second one in size was 3 feet in length and the two others were smaller.

The meeting then adjourned.

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Publications of the Association

1. Proceedings of the Natural Science Association of Staten Island

These Proceedings were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at $1.25 per volume. To others the price per volume is $2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. Proceedings of the Staten Island Association of Arts and Sciences

These Proceedings are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at $1.00. To others the price is 50 cts. per part or $2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents, and Index, contains:
Part I, June–December, 1905, pp. 1–20, issued April 10, 1906.
Part II, January–May, 1906, pp. 21–69, issued July 9, 1906.
Part III, October–December, 1906, pp. 71–92, issued April 17, 1907.
Part IV, January–May, 1907, pp. 93–136, issued September 20, 1907.

Volume II, with Title Page, Table of Contents, and Index, contains:
Part I, October 1907–January 1908, pp. 1–46, issued October 17, 1908.
Part II, February–May, 1908, pp. 47–124, issued September 30, 1909.
Part III, July 1908–February 1909, pp. 125–177, issued August 18, 1910.
Part IV, March–May, 1909, pp. 179–251, issued September 16, 1910.

Volume III, Part I, October–December, 1909, pp. 1–56, issued April 28, 1911.

Part II, January–May, 1910, pp. 57–108, issued May 2, 1911.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i–xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i–xxxvii, 1907), will be sent free on application.

3. The Museum Bulletin

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Current numbers sent free on application. Back numbers 2 cents each.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

The Staten Island Association of Arts and Sciences,
New Brighton, N. Y.

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VOL. III March–May, 1911 Part IV

PROCEEDINGS

OF THE

STATEN ISLAND ASSOCIATION

OF

ARTS AND SCIENCES

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

PUBLICATION COMMITTEE

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[Issued April 25, 1912]

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THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

VOL. III MARCH–MAY, 1911 PART IV

Salt Meadow Beetles[1]

CHARLES W. LENG

I desire to call attention to the salt meadows of Staten Island in connection with beetles. We have in them a locality differing from any other part of the island and therefore presumably inhabited by some insects not found elsewhere on Staten Island,—a locality as yet not greatly altered by our increasing population and likely in some parts to remain unaltered for a long time.

Some of the species which I know are to be found on the salt meadow and which I believe are peculiar to it and similar meadows in New Jersey and other parts of the Atlantic coast, are shown in this box. I may especially mention *Bembidium contractum* Say, which I have found abundantly on the sloping muddy banks of the winding creeks in the meadow. In the daytime they are hiding under rubbish, dried mud, pieces of wood, etc., and come out probably at night to hunt small prey on the banks. Other species of Carabidae are less plentiful; I have found *Clivina striatopunctata* Dej., and in J. B. Smith's list of the Insects of New Jersey about a dozen species are specially mentioned as inhabiting the salt meadows.

[1] Presented at the meeting of the Section of Biology, May 13, 1911.

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Rhypobius marinus Lec., a tiny member of the family Phalacridae, is perhaps the most abundant insect on the salt meadow, excluding mosquitoes. It is found on pieces of wood and at all seasons by sifting.

Several Rhynchophora live on the meadow. A number of *Sphenophorus,* living on the roots of the salt meadow grasses, are abundant and easily found on turning over rubbish. *Lissorhoptrus simplex* Say, a very pretty little weevil, is also not uncommon. and Smith mentions other species of *Sitones, Barini,* and others. It would be interesting to connect each of these with its food plant. The high tide bush (*Iva frutescens* L.) must be responsible for some of them. *Bruchus hibisci* Oliv. is found on the marsh mallow with large pink flowers. In addition to those mentioned, other beetles in Staphylinidae, Chrysomelidae, etc., are credited to the salt meadow and I hope that sufficient interest may be aroused by these remarks to cause Staten Island collectors to specially note and record salt meadow insects with ecological data.

The following references to Staten Island beetles may be recorded in our PROCEEDINGS:

Conurus imbricatus Casey, Staten Island type locality.

Oligomerus obtusus Lec. and *Petalium seriatim* Fall are both mentioned in Fall's monograph of the Ptinidae as occurring on Staten Island.

Philhydrus hamiltoni Horn by its name recalls the labors of the late Dr. John Hamilton on the Brigantine marshes and seems to be peculiar to such localities. I have taken other water beetles on the meadows and especially in the pools locally called salt holes, but I hardly think they are other than accidental inhabitants of the meadow.

Bryaxis abdominalis Aubé, its name suggesting the remarkable sculpture of the abdomen above in the males, was described from the salt meadows near Cambridge, Mass.; it is with us the most common Pselaphid on the salt meadow and is not found elsewhere. Early in April, on the Old Place meadow, nearly every bit of wood, bark, and other tidal refuse has one or more of these

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little beetles clinging to it. Often they are found copulating. By May they are less abundant but may be found by sifting the tidal refuse. Another Pselaphid, much less common, is identified by Mr. C. Schaeffer as *Bryaxis cavicornis* Brend., easily known by the deformed antennae of the male; and still other Pselaphidae and Scydmaenidae are reported to occur in the New Jersey meadows. They may be taken by sweeping the grasses after sunset, when crepuscular insects leave their hiding places.

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Additions to the Flora of Staten Island[1]

PHILIP DOWELL

The following list includes a few native plants not previously reported from Staten Island, some that have been recently recorded elsewhere but not in the publications of this Association, and others that have already been recorded in the PROCEEDINGS or in the Flora of Richmond County,[2] but for which records of new localities are here given. Occasional notes are added in connection with some of the records.

NOTE.—The names of plants not previously reported in the records of the local flora of the island are designated by an asterisk. The numbers printed in italics and inclosed in parentheses are those of herbarium specimens collected by the author. The ferns proper are discussed in a separate paper. *Lycopodium* is listed first, otherwise the names appear in alphabetic order. Most of the grasses have been determined or verified by Mr. G. V. Nash, and the sedges by Mr. K. K. Mackenzie.

LYCOPODIUM LUCIDULUM Michx.

Woods west of Egbertville, Aug. 31, 1907 (*5179*). This is the only place on Staten Island where I have found the species during eight seasons of collecting on the island, but in 1879 it was reported as common.

Lycopodium obscurum L. is found occasionally, but it is comparatively scarce, and *L. complanatum* L. is now rare. Both of these were "common" in 1879. Neither of the other two reported in 1879, *L. inundatum* L. and *L. clavatum* L., have been seen growing on the island on any of my field trips during the past eight years.

[1] Presented May 20, 1911.

[2] Hollick, A., and Britton, N. L. Flora of Richmond County, New York, 1–36. 1879. Additions and New Localities, 1879; 1880–1882; 1883–1884; 1885; 1886–1889; 1890; 1891–1895.

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ACHROANTHES UNIFOLIA (Michx.) Raf.

Woods near "Ketchum's Mill Pond," July 16, 1907 (*5020*); Bloodroot Valley woods, Aug. 13, 1907 (*5080*). Previously reported from New Dorp, Egbertville, Ocean Terrace, Great Kills (*3587*), and east of Richmond (*3875*).

AGRIMONIA PARVIFLORA Soland.

Egbertville, Aug. 29, 1907 (*5144*). Previously reported from New Dorp and Tottenville.

ARISTOLOCHIA SERPENTARIA L.[3]

New Springville, July 19, 1909 (*5869*). Previous records: "Elliot Collection" and "Tottenville (Herb. W. H. Leggett)."

ASCLEPIAS QUADRIFOLIA Jacq.

Dongan Hills, June 20, 1909 (*5731*). A few plants were found in this locality, in the open woods on the west side of Richmond Road, not far from the golf links.

In 1879 this was reported as frequent and in 1907 this species, like the preceding and the following, was listed by Mr. Wm. T. Davis[3] among the plants probably exterminated from the island.

ASTER ACUMINATUS Michx.[3]

Bulls Head,[4] Sept. 14, 1907 (*5207*), and Oct. 1, 1910 (*6621*); north side of Merrell Avenue, near South Avenue, Sept. 21, 1907 (*5220*); south side of Merrell Avenue, near South Avenue, Sept. 19, 1909 (*6042*). Found also by Mr. Wm. T. Davis between Pleasant Plains and Kreischerville, Sept. 18, 1909. Previous record: "Elliot Collection."

ASTER UNDULATUS LORIFORMIS Burgess.

Richmond Valley, Oct. 11, 1908 (*5627*). In 1906 it was reported from Richmond (Sept. 26, 1903, *2611*).

*CAREX ANNECTENS Bicknell. (*C. setacea ambigua.*)

Bradley Avenue clearing, June 19, 1909 (*5708*).

CAREX CANESCENS DISJUNCTA Fernald.

South Avenue, near Lambert Lane, June 9, 1907 (*4769*).

[3] See Davis, Wm. T. The Disappearing Wild Plants of Staten Island. Proc. Staten I. Assoc. 1: 110. 20 S 1907.

[4] Reference was made to its occurrence in this locality in the author's The Violets of Staten Island. Bull. Torrey Club 37: 179. 29 Ap 1910.

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Probably included in the list of 1880–1882 under "*Carex canescens* L. Common."

CAREX COSTELLATA Britton.

Bradley Avenue clearing, June 19, 1909 (*5710*). Previously reported under *C. virescens* Muhl.

CASSIA MARILANDICA L.

Palmer Avenue, Port Richmond, July 31, 1907 (*5072*). Reported from Eltingville, "Giffords," and Clove Lake in former records.

CHAMAELIRIUM LUTEUM (L.) A. Gray.

Egbertville, Aug. 26, 1905 (*4101*); Bradley Avenue clearing, June 4, 1910 (*6201*). Previous records: "Court House and Linden Park."

CLEOME SPINOSA L.

Near Bodine Pond, Aug. 28, 1905 (*4131*). Reported from near Arlington by Dr. A. Hollick.[5]

ECLIPTA ALBA (L.) Hassk.

Mariner Harbor, Aug. 14, 1906 (*4565*). Previous records: "*Eclipta erecta* L. 'West Brighton.' (*G. W. Wright.*)" "*E. procumbens* Michx. Sparingly near Richmond." "*Eclipta alba* Hassk. Beginning to spread in waste places and gardens. (*E. procumbens* of our catalogue.)" The last record was in the list of additions, 1883–84. Evidently the plant has not spread very much, for I have found it only once on the island.

*EUPATORIUM MACULATUM L.

Reed Swamp, Sept. 20, 1903 (*2517*); Palmer Run, Sept. 11, 1904 (*2997*); South Beach, Sept. 11, 1904 (*3384*). This is the common Joe-Pye weed on the lowlands.

*EUPATORIUM SEROTINUM Michx.

A plant of this southern species was found growing in a vacant lot at the corner of Franklin Avenue and Richmond Terrace, Oct. 4, 1910 (*6630*).

*EUPATORIUM TRIFOLIATUM L.

Along the railroad at Arlington, Oct. 3, 1903 (*2682*).

[5] Proc. Staten I. Assoc. 3: 64. 2 My 1911.

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*FRAXINUS NIGRA Marsh.

Swamp at Merrell Avenue, near South Avenue, May 30, 1906 (*4362*), and June 24, 1906 (*4383*); one small tree near "Ketchum's Mill Pond Brook," June 25, 1905 (*3830*). In the swamp on the south side of Merrell Avenue there are a number of large trees of this black ash.

HOTTONIA INFLATA Ell.

Ditch near South Avenue, May 29, 1909 (*5668*). Previous record: "Mariner's Harbor. Abundant in a pond near Court House."

*HYPOPITYS AMERICANA (DC.) Small.[6]

Richmond Valley, Sept. 23, 1905 (*4254*); Richmond, toward New Dorp, Sept. 24, 1905 (*4276*); Egbertville, July 11, 1906 (*4491*).

*HYPOPITYS LANUGINOSA (Michx.) Nutt.[6]

South New York No. 3 (formerly Darcey's woods), Aug. 14, 1907 (*5087*).

ILEX LAEVIGATA (Pursh) A. Gray.

Swamp near the corner of Merrell Avenue and South Avenue, June 3, 1906 (*4369*), and June 24, 1906 (*4382*). Previously reported from near Silver Lake and Tottenville.

ILYSANTHES ATTENUATA (Muhl.) Small.

Mariner Harbor, Aug. 14, 1906 (*4568*). Reported from Graniteville by Mr. Wm. T. Davis.[7]

INULA HELENIUM L.

Rockland Avenue, near New Springville, July 18, 1905 (*3899*). Previously reported from Garretson, New Dorp, and Morgan Road.

LILIUM CANADENSE L.

Bulls Head, June 26, 1908 (*5323*). Reported in 1879 as "rather common," but it is now rare on the island.

[6] Both *Hypopitys americana* and *H. lanuginosa* were probably included under the name *Monotropa Hypopitys* L. in the list of 1879.

[7] Proc. Nat. Sci. Assoc. Staten I. **8**: 5. F 1901.

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LILIUM PHILADELPHICUM L.

Below Ocean Terrace, July 15, 1907 (*5017*). In 1879 "not rare," but the species is now rare on the island.

*LYCOPUS COMMUNIS Bicknell.

Old Quarry Road, Sept. 30, 1904 (*2970*); Egbertville, Aug. 29, 1907 (*5141*). This has probably been included with *L. virginicus* in previous reports.

*LYCOPUS RUBELLUS Moench.

Egbertville, Aug. 26, 1905 (*4100*), and Aug. 31, 1907 (*5170*).

MIMULUS ALATUS Soland.

Bulls Head, Aug. 3, 1905 (*3999*), and Aug. 18, 1906 (*4579*). Previous record: "Along a brook near Huguenot."

PANICUM HUACHUCAE Ashe. (*P. pubescens* Lam.)

Meadow at Nicholas Avenue, Port Richmond, July 5, 1905 (*3864a*); Bradley Avenue clearing, June 19, 1909 (*5712*); south of Little Clove Road, June 20, 1909 (*5720*). In the Additions to the Flora of Richmond Co., 1885, there appears this note under *P. nitidum:* "Also a hairy form answering to the description of *P. pubescens,* Lam."; and in Appendix No. 7, 1891–1895, *P. pubescens* Lam. is reported from Richmond Valley.

*PANICUM LINDHEIMERI Nash.

South of Little Clove Road, June 20, 1909 (*5719*).

PANICUM PORTERIANUM Nash.

Ocean Terrace, June 20, 1909 (*5722*). *P. latifolium molle* Vasey has been reported from New Dorp.

PENTSTEMON DIGITALIS (Sweet) Nutt.

Woods at Great Kills, Nov. 9, 1907 (*5296*). Previously reported from New Dorp and West New Brighton.

SAXIFRAGA PENNSYLVANICA L.

Bradley Avenue clearing, May 17, 1908 (*5311*), and May 23, 1909 (*5647*). Previously reported from Clove Lake,[8] Reed Swamp[9] (*2042*), and South Avenue swamp (*3750*).

[8] Flora of Richmond County, New York, 13. 1879.

[9] Proc. Staten I. Assoc. 1: 40. 9 II 1906.

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SISYMBRIUM ALTISSIMUM L.

Richmond Terrace, near Nicholas Avenue, Sept. 30, 1909 (*6059*). This was first reported from Charles Avenue, Port Richmond,[10] where a single plant was found, Aug. 14, 1905 (*4029*). Another plant was found at St. George in 1908, and specimens from this plant were collected and prepared for the herbarium of this Association. The species is now abundant on the waste ground at the foot of Bodine Street, opposite McAllister's shipyard. During the last season (1910) it was noticed at several other places on the north shore of the island, and it was found plentiful on the waste ground along the east shore between Stapleton and Tompkinsville.

TARAXACUM ERYTHROSPERMUM Andrz.

Roadside at Rosebank, June 15, 1909 (*5705*).

THLASPI ARVENSE L.

Foot of Bodine Street, May 29, 1911 (*6665*).[11] Previously reported from Clove Lake.

The following violets, beside 30 hybrids, were published in the Bulletin of the Torrey Botanical Club[12] but have not been listed in our PROCEEDINGS:

*VIOLA AFFINIS LeConte. Frequent.

*VIOLA HIRSUTULA Brainerd.

*VIOLA INCOGNITA Brainerd.

*VIOLA TRILOBA Schwein.

*VIOLA EMARGINATA (Nutt.) LeConte.

This has been found also at Oakwood, May 7, 1910 (*6123*); June 4, 1910 (*6211*); June 19, 1910 (*6233*); Sept. 4, 1910 (*6553*); and at Great Kills, Sept. 17, 1910 (*6571*).

*VIOLA PECTINATA Bicknell.

Found also at New Dorp, near the beach, Sept. 11, 1910 (*6570*).

VIOLA CONSPERSA Reichenb.

This takes the place of *V. labradorica* Schrank in our lists.

[10] Proc. Staten I. Assoc. 1: 37. 9 Jl 1906.

[11] This record has been added after the meeting of May 20.

[12] The Violets of Staten Island. Bull. Torrey Club 37: 163–179. *pl. 11–18.* 29 Ap 1910.

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VIOLA ERIOCARPA Schwein.[18]

This should be recorded instead of the name *V. scabriuscula* (T. & G.) Schwein.

To these should be added the following new hybrids:

Viola brittoniana × sororia

Plant pubescent with fine spreading hairs. Rootstock thick, ascending. Blades of vernal leaves 2–4 cm. long, 1.5–3 cm. wide, ovate, mostly acute, cut-toothed or cleft, with a prominent middle lobe constituting the main part of the blade, on petioles two to four times as long; later leaves larger and wider in proportion to their length, some of the blades much wider than long and uncut; blue flowers on scapes as long as the petioles; cleistogenes prostrate or ascending, the scapes 6–15 cm. long; sepals lanceolate, two thirds to one half as long as the capsules, glabrous except on the prominent ciliolate auricles; capsules 10–15 mm. long, green or mottled with purple; seeds brown.

Bradley Avenue clearing, June 4, 1910 (*6196*), and July 1, 1910 (*6255*); transplanted and specimens collected Sept. 21, 1910 (*6592*), and May 13, 1911 (*6660*).

A colony of several plants was found at this station. Except for their pubescence, these plants are similar to *V. brittoniana* × *papilionacea* in their general appearance.

Viola emarginata × sororia

Plant pubescent with fine spreading hairs chiefly on the petioles and scapes. Rootstock thick, erect or ascending. Blades of leaves 3–7 cm. long, 2–5 cm. wide, irregularly toothed, especially at the base, triangular-ovate, mostly acute, base cordate to truncate, somewhat decurrent; blue flowers on scapes equaling the petioles; cleistogenes on prostrate or ascending scapes, which are about 5 cm. long; sepals lanceolate, acute, glabrous except on the ciliolate, long auricles; capsules elliptical in outline, mostly small and not well developed, slightly spotted with purple; seeds grayish brown, in size like those of *V. emarginata.*

Bradley Avenue clearing, June 4, 1910 (*6194*); transplanted and specimens collected again Sept. 21, 1910 (*6591*).

[18] See Brainerd, E. The caulescent violets of the southeastern United States. Bull. Torrey Club 38: 194. 5 My 1911.

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Notes on Some Staten Island Ferns[1]

PHILIP DOWELL

Since the time of the publication, five years ago, of my paper on the Distribution of Ferns on Staten Island,[2] several tracts of woodland on the island have been cleared, and thus some favorite haunts of the ferns have been destroyed. This clearing of the forests for lumber and for real estate improvements was especially active during the latter part of 1906 and the first part of 1907. Among the areas cleared are Darcey's woods, now South New York No. 3; a piece of woodland on the east side of Bradley Avenue, now included in South New York No. 2; a large tract near New Springville; one west of Richmond, near "Ketchum's Mill Pond"; and another on the east side of South Avenue, adjoining the one and one-half acre tract mentioned in my former paper as being especially rich in ferns. Fortunately this little fern tract has been spared, and it still contains 24 different kinds of ferns. Boott's fern has disappeared from this area but another has been added to the list instead.

In the list of 1906 there were 32 kinds of ferns given. To this should now be added 4 hybrid ferns, which have not been previously recorded in the publications of the Association, though the records have been published elsewhere. These are designated by an asterisk before the name, in the following list of records with occasional notes.

DRYOPTERIS CLINTONIANA (D. C. Eaton) Dowell, Proc. Staten I. Assoc. 1: 64. 9 Jl 1906.

Aspidium cristatum Clintonianum D. C. Eaton in A. Gray, Man. ed. 5, 665. 1867.

A new record is Ocean Terrace swamp, July 18, 1906 (*4509*).

[1] Presented at the meeting of the Association, May 20, 1911.

[2] Proc. Staten I. Assoc. 1: 61–67. 9 Jl 1906.

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*DRYOPTERIS CLINTONIANA × GOLDIANA Dowell, Bull. Torrey Club **35**: 137. 20 Ap 1908.

D. Goldieana celsa Palmer, Proc. Biol. Soc. Wash. **13**: 65. 1899.

South Avenue swamp, west of the fireworks factories at Bulls Head, Oct. 9, 1904 (*3558*). This locality is the one and one-half acre tract referred to before. A specimen of this collection was designated as the type in connection with the description of the hybrid. One plant of the original clump of two was taken home and transplanted July 25, 1907. This plant has been slow in establishing itself in our small city lot, but it has by this time become a robust plant and has afforded favorable opportunities for observation and for comparison with the other plant still growing in its native place.

*DRYOPTERIS CLINTONIANA × INTERMEDIA Dowell, Bull. Torrey Club **35**: 136. 20 Ap 1908.

A single plant at Bulls Head, Aug. 3, 1905 (*3995*); woods west of Egbertville, Aug. 17, 1905 (*4049*), also a single plant.

DRYOPTERIS CRISTATA × INTERMEDIA Dowell, Bull. Torrey Club **35**: 136. 20 Ap 1908.

Aspidium Boottii Tuckerman, Hovey's Mag. **9**: 145. 1843. South New York No. 3 (formerly Darcey's woods), Sept. 19, 1908 (*5571*).

The first known record of Boott's fern on Staten Island[3] is that of Nov. 14, 1903 (*2805*), when a single clump of the fern was found in the South Avenue swamp, west of the fireworks factories. Another plant was found a few rods farther east May 30, 1906 (*4357*), but this disappeared before the end of the year. The last record for Boott's fern in this swamp is that of June 23, 1907 (*4814*), when specimens were collected from the original clump. At that time a small tree, at the base of which the fern was growing, had been felled, and when search was made for the fern on several occasions later, the plants had disappeared. It may be well to recall in this connection that in the spring or

[3] Proc. Nat. Sci. Assoc. Staten I. **9**: 2. N 1903.

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winter preceding that time a large adjacent piece of woodland had been cleared, and this may have helped to kill the fern by changing the conditions of moisture.

The Bradley Avenue locality has been destroyed, but some plants of Boott's fern may still be found there, struggling to keep alive. The fern is still to be found in the other localities previously reported.

The so-called variety *multiflora,* which is a misnomer, is a robust and thickly fruiting form, sometimes found on plants that may produce ordinary fronds during a less favorable season or under less favorable conditions. One robust plant growing exposed to the sunlight but with plenty of moisture, at the base of an old tree stump, had "*multiflora*" fronds when first found, in the Bradley Avenue locality, July 3, 1905 (*3838*), but during the next two seasons this same plant produced very ordinary fronds. After the surrounding trees had been cut down, this plant was taken home and transplanted, Sept. 12, 1907. During the succeeding three seasons that have passed since then, this plant has appeared just like another plant of Boott's fern, which had been transplanted July 3, 1905, from the same locality and taken for an ordinary form, if it may be so called.

The preceding fern, *D. clintoniana* × *intermedia,* also produces large and unusually heavily fruited fronds under favorable conditions, and these fronds would also answer to the description of Gilbert's variety *multiflora.* In this case, too, it is a heavily fruited form, the fronds not necessarily larger than usual, though often so.

DRYOPTERIS CRISTATA × MARGINALIS Dav. Bot. Gaz. **19**: 497. 1894.

This was found near Bulls Head Aug. 3, 1905, but no specimens were taken on account of the absence of fertile fronds. The following year a specimen was collected from this plant, Aug. 18, 1906 (*4574*). Another new locality is the woodland west of Egbertville, where the fern was found at two different places; one along an old stone fence, June 9, 1906 (*4374*), and

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the other a number of rods farther west, along the brook in that locality, July 13, 1907 (*5011*).

There are still several clumps of this fern in the South Avenue swamp, from which it was first reported[4] (*2760*, Oct. 31, 1903).

*DRYOPTERIS CRISTATA × SPINULOSA (Milde) C. Chr. Ind. 259. 1905.

Aspidium cristatum × spinulosum Milde, Nova Acta **26**: 533. 1858.

Ocean Terrace swamp, Aug. 2, 1905 (*3994a*), and July 15, 1907 (*5013*); Bulls Head, June 10, 1906 (*4380a*), and July 24, 1907 (*5053*). These have been transplanted and kept under observation at home.

DRYOPTERIS GOLDIANA (Hook.) A. Gray, Man. ed. 1, 631. 1848.

Aspidium Goldieanum Hook. Edinb. Philos. Jour. **6**: 333. 1822.

Grasmere, June 26, 1910 (*6249*). One of the two localities near New Springville previously reported[5] for this fern has been destroyed by the cutting down of the woods, otherwise it is still found growing in the other localities reported. The first known record for Goldie's fern on Staten Island is that of Oct. 31, 1903 (*2757*), when it was found in the South Avenue swamp.[6]

DRYOPTERIS INTERMEDIA × MARGINALIS Benedict, Bull. Torrey Club **36**: 48. 29 Ja 1909.

Found growing on a stone fence near brook east of New Springville, Nov. 27, 1904 (*3622*),[7] and reported as *D. pittsfordensis* Slosson in the Proc. Nat. Sci. Assoc. Staten I. **9**: 42. Mr 1905. It was still included as *D. pittsfordensis* in my account of the ferns of the island presented at the meeting of the Association in May 1906, although the glandular character of the in-

[4] Proc. Nat. Sci. Assoc. Staten I. **9**: 8. Ja 1904.

[5] Proc. Staten I. Assoc. **1**: 64. 9 Jl 1906.

[6] Proc. Nat. Sci. Assoc. Staten I. **9**: 2. 1903.

[7] This locality was destroyed by the felling of the surrounding trees during the winter of 1906–1907. On June 1, 1907, when the locality was visited, the plant had fallen down with the rocks and was almost destroyed. It was then taken home and transplanted and has gradually regained its vigor, as shown by a specimen collected Oct. 1, 1909 (*6060½*).

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dusia had been recognized as a distinguishing mark between this fern and the type specimens of *D. pittsfordensis* in the herbarium of the New York Botanical Garden.

The validity of this distinction was emphasized when I had the opportunity of examining another specimen with glandular indusia, similar to the New Springville plant. This specimen had been collected by Mr. R. C. Benedict near Solvay, N. Y., Aug. 9, 1905, sent by him to Professor L. M. Underwood, and by Professor Underwood submitted to me for identification. In spite of the recognized differences between the type specimens of *D. pittsfordensis* and this specimen, it was then identified as *D. pittsfordensis,* in accordance with Professor Underwood's treatment of our common American wood fern with glandular indusia as a variety of *D. spinulosa* instead of as a recognized species, *D. intermedia* (Muhl.) A. Gray. The validity of the distinction was further established when I found, on Staten Island, Aug. 17, 1906 (*4570*), a live plant similar to the type specimens of *D. pittsfordensis* and differing from the New Springville plant in its general appearance and smooth indusia.

This was another link in the chain of associations that led to the conviction that these ferns are the representatives of two sets of hybrids, one with *D. intermedia,* and the other with *D. spinulosa.* Moreover, it served to establish the conviction that our common American evergreen wood fern with glandular indusia is fully entitled to specific rank and that we should follow Muhlenberg and Gray in recognizing it as such.

*DRYOPTERIS MARGINALIS × SPINULOSA Slosson, Bull. Torrey Club **36**: 49. 29 Ja 1909.

D. pittsfordensis Slosson, Rhodora **6**: 75. *f. 1.* 6 Ap 1904.

Woods east of Bradley Avenue, in a small wet depression, Aug. 17, 1906 (*4570*). This is the plant referred to under *D. intermedia × marginalis.* There were, in fact, two plants growing side by side, but one of them was small and undeveloped and was not at that time identified with certainty. The older plant was transplanted at Port Richmond on September 2 of the same

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year and has been doing well. The original locality was cleared during the following winter and converted into a city lot, and the smaller plant was found with difficulty the next summer. This, too, was taken home and transplanted, and has established its identity as this same hybrid.

WOODWARDIA VIRGINICA (L.) J. E. Sm.

Pond at the corner of Ocean Terrace and Todt Hill Road, Oct. 4, 1908 (*5626*); woods west of Great Kills, Sept. 11, 1910 (*6577*).

Beside the one and one-half acre plot previously mentioned and the adjoining woodland of which it forms a part, there still remain on Staten Island a few other forest tracts that have been left comparatively undisturbed and are favorable to the growth of certain ferns characteristic of moist woodlands. Among these may be mentioned: the upper part of the valley on the south side of Ocean Terrace and on the east slope of Todt Hill; the woods west of Egbertville, a portion of which has not been destroyed; the woods adjoining the brook between "Ketchum's Mill Pond" and the present dam; a tract north of this, toward New Springville, adjoining the New Springville area previously mentioned as having been cleared during the winter of 1906–1907; the Bulls Head woods; and the forest near the corner of Merrell Avenue and South Avenue.

So, in spite of the continual destruction of our forests, Staten Island can still offer to the lover of nature some deep woodland retreats, where he may roam in peaceful enjoyment of nature and revel in the profusion of its forms of life, forgetting for the time the turmoil and strife of other parts of the great city of which these woodlands form a part. It would be fortunate, indeed, if these would be preserved to posterity.

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John J. Crooke: a Staten Island Naturalist[1]

WILLIAM T. DAVIS.

Mr. John J. Crooke died April 22, 1911, at his home, which overlooks Great Kill, Staten Island, and was buried at Poughkeepsie, N. Y. He was born January 22, 1824, at Stuyvesant, Columbia Co., N. Y., on the banks of the Hudson, not far north of the place where he was buried. Long ago he came to Staten Island and purchased a large tract of land on the "south side," including the one-time point, but now an island, that bears his name. He has told the writer that when he first came to the island there was a forest over much of his land. He made the clearing for the house and had a fire-proof room built with brick-arched ceiling and iron doors for his natural history collections. Some of these collections were acquired by purchase, and they included the Meisner herbarium and the Chapman herbarium of southern plants, which were given to Columbia College and finally found a resting place in the New York Botanical Garden. They included also a large collection of land shells, now the property of the American Museum of Natural History, and many minerals and other objects collected during his extended travels in Colorado and the west, where at one time he owned silver mines.

The writer made several visits to this living room and museum, where cases of birds, plants, and other natural history material were numerous, where a specimen of the now probably extinct passenger pigeon sat on top of a bookcase, and where Mr. Crooke had a lathe and other mechanical appliances. He told us that he had made a clock some years before and that it was still running at the time of our visit. There were many pictures of shells about the room, and a medallion of Dr. John Torrey, who with Peter Le Roy, the botanist, had the first care of the botanical col-

[1] Presented May 20, 1911.

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lections donated by Mr. Crooke to Columbia College. He told us of the pitcher plants that he used to find in the swamp near his home. At the time of our visit the grounds about the house were very attractive to the eye of a naturalist, for he had let many little thickets grow up, as of much interest to him and as a shelter to the birds. He told us that quail used to nest in the orchard and that he got into much trouble trying to protect the birds in former days. One time, when he ordered a gunner out of his place, the desperate man was going to shoot him, and he stood looking into the barrels of his gun for a minute or more, expecting the man to pull the trigger.

Many smugglers used to frequent the lonely beach, and Mr. Crooke once saw and went on board of a brig lying in Great Kill that had a piece of canvas nailed over her name. When he visited the vessel, there were only a man and a dog on board. The brig disappeared the following night.

When Joseph Brown lived on the point, for it was once called "Brown's Point" or the "Beach of Sand," a man knocked at his door one night and said he had business with him. He asked if what he told Brown would be kept a secret. Brown said that it would, but the stranger insisted upon swearing him on the family Bible. The visitor then said that a number of boxes of arms were to be brought to the point, and he asked Brown where they had best be hidden. Brown suggested that they be put under a dilapidated old building, and the stranger departed. After some days a schooner appeared off the beach, and in the night the boxes were brought ashore and deposited as agreed. They stayed there some time, and were again moved in the night. They were probably used in some of the disturbances in Cuba. Brown received a pair of ivory-handled revolvers for not mentioning the fact that the boxes were stored on the point.

The place where Brown lived was afterward used as a clubhouse, and because of some disagreement between the clubmen and the natives the house was set on fire, and now only the hole in the ground, where the foundation was, remains.

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On one occasion Mr. Crooke was having a gun constructed by an expert. Audubon's grandson happened in and seeing the new gun asked for whom it was being made. He was told of Mr. Crooke and his amusements and hobbies and remarked that he had his grandfather's gun. Mr. Crooke, hearing of this, expressed a wish to secure a photograph of the gun, but the younger Audubon said that if Mr. Crooke would have a gun built for him like the one being made, he would give his grandfather's gun in exchange. This was done and Mr. Crooke paid $300.00 for the new gun. In later years he was afraid that the Audubon gun might be lost, and so he presented it to the American Museum of Natural History, where it is at present on exhibition.

Mr. Crooke was also instrumental in finding the original plates of Audubon's great work on birds, now in the American Museum and elsewhere. Mr. Crooke himself had one of these plates hanging below the medallion of John Torrey above his mantel in the fire-proof room. Being interested in mines and manufacturing, he became acquainted with Mr. Phelps, whose shops were at Ansonia, Conn. Mr. Phelps one day told Mr. Crooke that he had bought a lot of plates as scrap, and as they contained figures of birds he might be interested in them; they were up on the second floor and he had better go and look at them. It did not require much of an examination to show that they were the plates of the large edition of Audubon's birds. Some of the plates had been scored across the face, thus destroying the figures more or less, but many others were in good condition. Mr. Crooke told Mr. Phelps of his discovery and asked to be allowed to purchase some of the plates. This he did, paying the price of scrap copper. He took them off, under his arm, as many as he could carry, and had them cleaned and rubbed with nickel and gold dust, which brought out the figures. He then told Mr. Phelps what he had done, and upon learning that the plates could be so restored, Mr. Phelps sent the remaining perfect ones and had them treated likewise. Those that had been scored on the face Mr. Crooke thought went into the smelter, which is much to be regretted. Later, Mr.

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Phelps gave at least some of his plates to the American Museum, and Mr. Crooke also gave away some of those he first selected.

When Mr. Crooke was in the manufacturing business he was invited to call on Mr. Thomas A. Edison and see if he could not suggest some material that would do for his phonograph cylinders. Mr. Edison asked him to step out of the room for a moment while he repeated a few words to the phonograph, then upon his return see if he could tell what he had been saying. While he was outside he heard Mr. Edison repeating, "Mary had a little lamb." Upon his return the machine was worked backward and Mr. Crooke repeated "Mary had a little lamb," which greatly pleased Mr. Edison until Mr. Crooke told him what he had heard. So a new trial was made, and Mr. Crooke went to a much greater distance but only to hear Mr. Edison, who talked louder than he thought, repeat: "If I were a cassowary on the plains of Timbuctoo." It was of no use, the machine did not work then as it should, and Mr. Crooke tried many things in the way of metals out of which cylinders might be made. It was not until some time after, that the idea of the mixture of hardened wax, etc., was perfected.

Mr. Crooke was a most interesting narrator of his many experiences and possessed a retentive memory and a great store of exact knowledge on a wide range of subjects. He entertained us for many hours with stories of the hostile Indians that at one time frequented the vicinity of Crookeville in Colorado; with the scenes of his boyhood days along the Hudson River; and with accounts of the great flocks of the wild passenger pigeons, which are no more.

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Literature Relating to Staten Island

List of New York Mineral Localities[1]

This list is arranged alphabetically by counties, and the localities in the same manner in each county. Accompanying the locality names are lists of the minerals reported as occurring there, together with references to the authorities quoted. The latter are included in a bibliography of 231 numbers.

Richmond County is mentioned on page 72 in a very incomplete enumeration of both localities and minerals. The diabase rock and its associated minerals are entirely ignored, and those of the serpentine area are included in a list of only twelve species. Inasmuch, however, as the bibliography contains only one reference to our Proceedings it is evident that the author's search for information was not very exhaustive.

A. H.

Aboriginal Place Names of New York[2]

In this bulletin the localities for which Indian names are known are conveniently grouped under each county in the state, and the counties are arranged in alphabetical sequence. An index of all the names and localities mentioned is also included, so that reference may be quickly made either to place or name.

Richmond County appears on page 186, where a list is given of the many different names under which Staten Island was known at various times. "Aquehonga" is stated to be the Anglicized form of the Delaware "Achwowangeu," meaning "high sandy banks," and the name "Aquehonga Manacknong" to mean "the island with high sandy banks," probably in reference to the

[1] H. P. Whitlock. N. Y. State Museum Bull. 70 (Mineralogy 3), 8vo pamph., pp. 108, Albany, N. Y., 1903.

[2] Wm. M. Beauchamp. N. Y. State Museum Bull. 108 (Archeology 12). 8vo pamph., pp. 333, Albany, N. Y., 1907.

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favorite camp and village sites at Mariner's Harbor, Watchogue, and Tottenville. "Eghquaons" is said to be the Dutch form of the word.

Matanucke and Matawucks are also cited as early names for the island, meaning "land of periwinkles."

De Vries is quoted as calling it "Monocknong" and the Indians "Monatons," or "islanders." Schoolcraft is quoted as interpreting the former word to mean "ironwood place" instead of "island place," which interpretation the author regards as erroneous.

The final paragraph will, perhaps, appear somewhat inconclusive to those who are familiar with the locality mentioned, viz.: "Wat-chogue has sometimes been written Watch Oak, and is a notable hill on this island. If an Indian name, as is probable, it would be from wadchu, *a hill,* adding the locative. Tooker defines Watchogue elsewhere as *hilly land,* which suits this place."

Incidental references to Staten Island may also be found on pp. 99 and 243.

A. H.

ACQUISITION BY NEW YORK CITY OF THE LARGER TWO WATER SYSTEMS OF STATEN ISLAND[3]

This is a reprint, in octavo pamphlet form, of a paper presented at the twenty-ninth annual convention of the American Water Works Association. It includes brief references to the topography and geology of Staten Island and a detailed account of the estimates made in arriving at a basis of the valuation of the plants of the Staten Island Water Supply Co. and the Crystal Water Co., when the city decided to acquire them. The illustrations include pictures of the several pumping stations at West New Brighton, Brighton Heights, Bull's Head, New Springville, Grant City, and in the Clove Valley; views of the reservoirs on Fort Hill and near Four Corners; and the water tower on Grymes

[3] Louis L. Tribus. Proc. Amer. Water Works Assoc. 1909: 557–570. *f.* 1–10 + *map.*

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Hill. The map is designed to indicate the most prominent features of the surface geology, the principal centers of population, and the areas of the several drainage basins (erroneously designated as "water sheds"), with the direction of flow in each.

A. H.

THE FOSSIL FLORA OF NEW YORK AND VICINITY[4]

This paper consists of a review of the history of the discovery of the first fossil plant remains in the vicinity of New York and the subsequent field work which resulted in the discovery of similar remains on Staten Island, Long Island, and in New Jersey, and a brief description of the arrangement of the specimens in the paleobotanical museum of the New York Botanical Garden.

A. H.

TWO POPULAR ARTICLES ON THE CHESTNUT DISEASE[5]

It may be recalled that the chestnut disease, due to the fungus *Diaporthe parasitica* Murrill, was described and discussed at the October meeting of the Association in 1908 (Arthur Hollick and Wm. T. Davis, PROC. STATEN I. ASSOC. **2**: 125–129). Since that time the devastation wrought by the fungus has attracted so much attention that it has reached the stage of general interest, and a number of popular articles on the subject have appeared in magazine and newspaper literature, occasionally with incidental reference to Staten Island.

A. H.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES. PUBLIC MUSEUM[6]

This number of the bulletin consists of a Directory of American Museums of Art, History and Science, compiled by Paul

[4] Arthur Hollick. Journ. New York Bot. Gard. 11: 15–19. *f.* 6. 1910.

[5] The Passing of the Chestnut Tree. Bailey Millard. Munsey's Mag. 758–765. Six figures in text. S 1910. New York Times, Oct. 2, 1910, with map of the infected area and illustrations of devastated woodlands and of the fungus.

[6] Bull. Buffalo Soc. Nat. Sci. 10¹: 197–199. 1910.

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Marshall Rea, secretary of the American Association of Museums. The scope of the directory includes institutions throughout the United States, Canada, Bermuda, Mexico, Central America, and South America. The statistics of our Association make an excellent showing in every way except in regard to material on exhibition. In this respect our lack of space for the display of specimens is strikingly apparent and forcibly demonstrates our need of larger quarters. For example, the minerals in storage number 2,500 ± and those on display, 150; shells in storage, 2,200 ±, and on display, 260; archaeology and ethnology, 15,500 ±, only a few of which are on exhibition; and botany, with a very valuable herbarium, practically unrepresented in the display collections. With few exceptions all of our specimens are identified and properly labeled or numbered, so that any or all of them could be placed on exhibition at any time, with full descriptive data, whenever adequate facilities be at our disposal.

A. H.

A NEW PREPINUS FROM MARTHA'S VINEYARD[7]

In this paper the author describes and illustrates a new species of ancestral pinaceous remains, from the Cretaceous clay at Gay Head, Martha's Vineyard, under the name *Prepinus viticetensis*, and discusses at considerable length its affinities with *Prepinus statenensis* from the Kreischerville clays. Specimens of the latter species are depicted in FIG. 1 and 2, PL. 33. The local interest attaching to this discussion is naturally enhanced by the fact that the type of the genus is represented by a Staten Island specimen, collected some four years ago, described by Dr. Jeffrey in Annals of Botany **22**: 207 *pl. 13, f. 1.* 1908 (see reviews in PROC. STATEN I. ASSOC. **2**: 99. 1908).

The arrangement of the text is not quite as faulty as that of which the author has been occasionally guilty heretofore, but it is characteristically careless and shows an indifference to clear-

[7] Edward C. Jeffrey. Proc. Boston Soc. Nat. Hist. **34**: 333–338. *pl. 33.* Jl 1910.

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ness of expression and logical arrangement which is difficult to understand and impossible to excuse.

A. H.

THE TOADS OF THE NORTHEASTERN UNITED STATES[8]

In this communication the authors give an account of the distribution, within the region indicated, of *Bufo americanus* and *B. fowleri,* with descriptions of the characters denoting specific differences between them. The only Staten Island toad recognized is stated to belong to the latter species, as previously noted by Mr. Chapin in our PROCEEDINGS **2**: 227. The authors touch upon the question of specific or varietal differences, with a hint at possible hybridity, and end the discussion with the following interesting note: "A male American toad, during the spring of 1909, which was put in a cage with some frogs, was later found clasping a female pickerel frog (*Rana palustris*), to which he clung for several days. Would not such an individual, if unsuccessful in securing a mate of his own species, be quite likely, a little later, to fertilize the eggs of a female Fowler's toad?"

A. H.

THE KINGFISHER AT HOME[9]

This is an article in which our Association may justly feel a proprietary interest, as representing the work of one of its members, both in the text and in the illustrations. The colored cover design is adapted from a photograph by Dwight Franklin showing a kingfisher in flight, just as it was leaving its hole.

For some reason, perhaps to avoid publicity, the locality where the observations were made and the photographs taken is not mentioned; but those of our members who were privileged to hear Mr. Cleaves' lecture and to see his lantern slides, will recognize the bluff on the shore at Prince's Bay, with all the details of the bird's flight, its hole in the bank, and the methods em-

[8] W. de W. Miller and James Chapin. Science II. **32**: 315-317. 1910.

[9] Howard H. Cleaves. Country Life in America **18**: 333-335 + nine text figures. Jl 1910.

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ployed in taking the pictures, as he described them to us so delightfully.

This article should be an incentive to the Association to provide the means for illustrating our PROCEEDINGS in a similar manner when suitable papers are submitted for publication.

A. H.

THE BIRD OF THE SILENT WING[10]

Under the above title the author has written one of his interesting bird articles, dealing with his observations on the owls of Staten Island. The illustrations, reproduced from photographs taken by the author, may be recalled as having been shown at meetings of the Association. They include young barn owls and old ones in flight, red and gray screech owls in characteristic poses, a saw-whet and a short-eared owl. The facts included in the text are for the most part familiar to us from the papers read at meetings of the Association by Mr. James Chapin (see PROC. STATEN I. ASSOC. **2**: 3. 1908; and **2**: 132. 1910), and it is pleasing now to have the observations and the illustrations combined, even though the article is not issued under our own auspices.

A. H.

STATEN ISLAND BIRD NOTES AND PICTURES[11]

In Bird Lore, under the heading A New Departure for the Redwing, Mr. Howard H. Cleaves describes a change in the nesting habits of the redwinged blackbird, *Agelaeus phoeniceus* (L.), on Staten Island, which he is inclined to ascribe to the ditching and draining of the salt marshes in the crusade against mosquitoes. The birds have largely abandoned their former nesting places in the marshes and have taken to the adjacent upland meadows. One illustration shows a female redwing hovering.

[10] Howard H. Cleaves. Country Life in America **18**: 429–432 + eight text figures. Au 1910.

[11] Howard H. Cleaves. Bird Lore **12**: 56, 60–62, 107, 110. 1910. [See Proc. Staten I. Assoc. **3**: 71, 72. 2 My 1911.]

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Another is a view of a meadow, thickly covered with daisies, in which the nests were found.

A barred owl, *Strix varia varia,* in the first moments of its flight from a hollow tree, is depicted on p. 56.

The cover illustration for the May–June number is a picture of a spotted sandpiper, and the same picture is repeated on p. 107, and a bobolink, perched and in the act of singing, is the subject of an illustration on p. 110. All of the illustrations are reproductions of photographs taken by Mr. Cleaves in the vicinity of Prince's Bay.

ON THE AFFINITIES OF THE GENUS YEZONIA[12]

In this article the author discusses two genera of fossil plants described by Stopes and Fugii from the Cretaceous of Japan (*Yezonia* and *Cryptomeriopsis.* Philos. Trans. Roy. Soc. London **201B**: 1–90. *pl. 1–9.* 1910). It may appear to be wandering rather far afield to connect Japan with Staten Island, but the author contends, and apparently with every fact in his favor, that the supposed new genus *Yezonia* is identical with *Brachyphyllum,* utilizing sections of *B. macrocarpum* Newb., from the Kreischerville clays, for purposes of comparison. Similarly, the genus *Cryptomeriopsis* is regarded as identical with *Geinitzia* (*Sequoia*) *Reichenbachi* (Gein.) Hollick & Jeffrey, from the same deposits (Mem. N. Y. Bot. Gard. **3**: 38. 1909, reviewed in PROC. STATEN I. ASSOC. **2**: 205. 1909). It is certainly interesting to realize that specimens collected in Japan, carried to England, and described there as new to science, are generically and perhaps specifically identical with specimens previously collected and described from Staten Island.

A. H.

[12] Edward C. Jeffrey. Annals Bot. **24**: 767–773. *pl. 65.* O 1910.

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THE AFFINITIES OF GEINITZIA GRACILLIMA[13]

This is the third article of recent date, by the same author, which refers either directly or indirectly to fossil plants from the Cretaceous deposits of Staten Island. In this paper the material described and discussed was collected on the adjacent shores of New Jersey, in the vicinity of Cliffwood, but the Kreischerville material is incidentally mentioned. The author shows that the so-called *Sequoia gracillima* (Lesq.) Newb. is not a *Sequoia,* but that it belongs in the Araucarineae and should be included in the genus *Geinitzia,* hence the title of the paper which, however, should have been made to read "Affinities of the So-called *Sequoia gracillima* (Lesq.) Newb.," leaving the new combination to first appear in the text in its appropriate place.

A. H.

[13] Edward C. Jeffrey. Bot. Gaz. 51: 21–27. *pl. 8.* Ja 1911.

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Records of Meetings

Reception, March 25, 1911

An afternoon reception, in place of the regular March meeting of the Association, was held in the newly occupied museum building, No. 154 Stuyvesant Place, New Brighton, to signify the formal opening of the museum in its new quarters. About 150 persons were present.

Addresses were delivered by the president, Hon. Howard R. Bayne; Dr. William T. Hornaday, Director of the New York Zoological Park; and Mr. Louis L. Tribus, Commissioner of Public Works for the Borough of Richmond.

A dinner in commemoration of the event was held at Hugot's Hotel, St. George, in the evening, at which about eighty members and guests were present. Addresses were delivered by the president, Hon. Howard R. Bayne; the secretary, Dr. Arthur Hollick; Dr. Franklin W. Hooper, Director of the Brooklyn Institute of Arts and Sciences; Dr. Frederic A. Lucas, Curator of the Museum of the Brooklyn Institute; Dr. William T. Hornaday, Director of the New York Zoological Park; Hon. George Cromwell, President of the Borough of Richmond; Hon. William Allaire Shortt, Member of Assembly; Dr. John Q. Adams; and Mr. Edwin Markham.

Regular Meeting, April 15, 1911

The meeting was held in the assembly room of the Museum, No. 154 Stuyvesant Place, New Brighton, President Howard R. Bayne in the chair, and about forty persons present.

The minutes of the meeting of February 18, 1911, were read and approved.

The president referred to the advisability of increasing the number of trustees of the Association and suggested, if the Association approve, that a resolution be adopted authorizing the introduction of bills in the State Legislature to amend the charter of the Association in that particular.

Voted: That the representatives in the State Legislature from this county be authorized to introduce bills amending the charter of the Association to give it power to increase the number of its Board of Trustees to twenty-five.

Scientific Program

The president introduced the speaker of the evening, Dr. A. W. Ferris, President of the New York State Commission in Lunacy, who delivered an illustrated address on Insanity: Its Causes and Prevention.

On motion a vote of thanks was tendered Dr. Ferris for his courtesy in delivering the address, and to Mr. Charles A. Ingalls for the use and management of the stereopticon.

The meeting then adjourned.

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ANNUAL MEETING, MAY 20, 1911

The meeting was held in the assembly room of the Museum, No. 154 Stuyvesant Place, New Brighton, President Howard R. Bayne in the chair, and twenty-five persons present.

The minutes of the meeting of April 15, 1911, were read and approved.

The annual report of the Board of Trustees, including reports of the standing committees and curator-in-chief, was read and ordered placed on file. (See pp. 183–192 of this issue.)

The annual report of the secretary was read and ordered placed on file. (See p. 193 of this issue.)

The annual report of the treasurer was read and ordered placed on file (p. 193).

Mr. Howard H. Cleaves, recorder of the Section of Biology, presented a report on the activities of the section during the year (p. 194).

Dr. John Q. Adams made a verbal report on behalf of the Section of Art, and Mr. Edward C. Delavan made a similar report on behalf of the Section of Historical Research.

The president stated that the next order of business was the election of four trustees [to fill the vacancies caused by the expiration of the terms of office of John Blake Hillyer, Philip Dowell, William Hinman Mitchill, and George Scranton Humphrey], and called for the report of the committee on nominations. The committee submitted, as nominees, the names of Bradish Johnson Carroll, Norman Stewart Walker, William Hinman Mitchill, and George Scranton Humphrey. The president asked if there were any other nominations, and no others being made, the secretary, on motion, was instructed to cast one affirmative ballot for the nominees submitted by the committee. The secretary cast the ballots as instructed and the president declared the nominees elected trustees of the Association for the ensuing three years.

On motion the president was authorized to appoint a committee of three, of which the principal of Curtis High School should be one, to award the Association's annual prize in natural science at the school.

The president reported on legislation introduced by him in the State Senate, amending the charter of the Association by authorizing the enlargement of the Board of Trustees to twenty-five members.

The president then delivered his annual address.

SCIENTIFIC PROGRAM

Dr. Philip Dowell exhibited herbarium specimens representing additions to the local flora, with memoranda and notes. (Printed in full in this issue, pp. 156–168.)

An obituary notice and biography of Mr. John J. Crooke, by Mr. William T. Davis, was read by the secretary. (Printed in full in this issue, pp. 169–172.)

The meeting then adjourned.

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Annual Reports

Report of the Board of Trustees for 1910–1911

The Board of Trustees held eight meetings, as follows: the annual meeting, May 28, 1910; stated meetings on October 1 and December 3, 1910, February 1 and April 1, 1911; and special meetings on November 11, 1910, February 11 and March 11, 1911.

At the annual meeting the officers of the preceding year were reelected unanimously. The rules of the Board were amended so as to provide four instead of three stated meetings during the year, to be held on the first Saturdays in October, December, February, and April.

The following active members have been elected by the Board during the year: Ralph Bainbridge, Dr. C. W. Bliss, Mrs. C. W. Bliss, Mrs. Willard A. Boyd, James W. Clawson, Mrs. L. A. Dreyfus, C. S. Egbert, Mrs. Eleanor C. Gardner, Charles G. Hine, Dr. William R. Janeway, Edward W. Lemon, Walter S. Mayer, Mrs. Charles Metcalfe, Mrs. A. J. Newbury, Miss Helen M. Oakley, John B. Pearson.

The Board records with regret the death of the following active members: John M. Carrère, Rev. Hobart Clark, Thomas O. Horton, Charles W. Hunt, Dr. Horace Patterson.

Early in June a petition signed by many prominent members of the bench and bar of Richmond County, was transmitted to the Board of Estimate and Apportionment requesting that Room 309 in Borough Hall, then occupied by our museum, be turned over to the use of the Supreme Court, and that the house at 154 Stuyvesant Place, St. George, be leased for the Association. The Board of Trustees deemed it a wise policy to take no active part in furthering this petition, but at the suggestion of various officials made application, through Borough President Cromwell, for an issue of revenue bonds in the sum of $2,625 to cover moving, repairs, and operating expenses, on the assumption that the museum would be able to occupy the new quarters on October 1, 1910. Application was later made for a budget appropriation of $10,020. This was referred to the budget committee of the Board of Estimate and again referred to Borough President McAneny as a subcommittee for report. A hearing was given in Mr. McAneny's office, at which the Association was represented by the president, Senator Bayne, the acting secretary, Dr. Adams, and the curator-in-chief, Mr. Pollard. The Bar Association was represented by Mr. Eugene Lamb Richards. As a result of this hearing the amount finally settled upon was $9,000, and this sum was approved by the Board of Estimate and Apportionment. The budget was adopted by the Board of Aldermen on November 27, and negotiations for the lease of the property were then carried forward. The Association

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entered into possession on January 1, 1911, the lease having been signed on December 30. After several weeks it became apparent that the pending revenue bond issue would not receive favorable consideration, and on February 3 the executive committee, which had been duly empowered by the Board to take charge of all matters relating to the transfer of the museum, voted to proceed with the necessary repairs, using as much of the budget appropriation as might remain after the necessary allotments for salaries, rent, supplies, fuel and lighting, etc., and assuming the remainder of the expense as a charge upon the Association. The contracts were in every case awarded to the lowest bidder, and only absolutely necessary work was performed. The aggregate cost was about $1,500. The curator-in-chief was authorized to supervise the work under the general direction of the committee. Repairs were begun on February 15 and completed during the first week in March. The transfer of the museum occupied nearly six days and was completed on March 13. The Board then appointed a special committee, consisting of Mr. and Mrs. C. A. Ingalls, Mr. and Mrs. W. H. Mitchill, and Dr. and Mrs. J. Q. Adams, to make arrangements for a celebration of the reopening of the museum. This celebration, held on March 25, took the form of an afternoon reception, attended by about 150 persons. Informal exercises were held in the assembly hall, addresses being made by Senator Howard R. Bayne, Dr. W. T. Hornaday, Director of the Bronx Zoological Park, and Commissioner Louis L. Tribus, of the Department of Public Works. In the evening a highly successful dinner was given at Hugot's, attended by about eighty members and friends of the Association.

The guests were: Hon. George Cromwell, Professor Franklin W. Hooper, Dr. Frederic A. Lucas, Dr. W. T. Hornaday, Mr. Edwin Markham, Mr. Sanderson Smith, and Rev. Charles Waldron.

The following appointments to the enlarged museum staff were made: Mr. Charles L. Pollard, curator-in-chief; Mr. Howard H. Cleaves, assistant curator; Miss Agnes L. Pollard, museum assistant; Mr. Alexander Forsyth, janitor; Mr. D. M. Van Name, museum guard; and Mr. Lawrence Liedy, night watchman.

The hours during which the new museum should be open to the public were fixed at 10 a. m. to 5 p. m. daily except Sundays, thus including all holidays. The question of Sunday opening has been deferred for later consideration.

The Board tenders to the Association its congratulations on the greatly increased facilities to the museum due to its being housed in a separate, conveniently located and easily accessible building. All of which increased advantages are reflected in a large increase in the number of visitors. The exhibits are shown to much greater advantage as they are now properly grouped in the separate rooms.

The Association is also to be congratulated on its museum staff, every member of which is efficient and loyal to the interests of the Association.

J. Q. ADAMS,
Acting Secretary.

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REPORT OF THE EXECUTIVE COMMITTEE

The executive committee has held ten meetings during the year, transacting a large amount of business entrusted to it by the Board. The action of the committee on the various items is recorded in the minutes, which have been duly reported to, and approved by, the Board.

J. Q. ADAMS,
Acting Secretary.

REPORT OF THE MUSEUM AND LIBRARY COMMITTEE

This committee has held several meetings for the consideration of matters of policy and museum details submitted to it by the curator-in-chief.

WM. T. DAVIS,
Chairman.

REPORT OF THE COMMITTEE ON ACCESSIONS

The committee on accessions begs to report that it has inspected all of the accessions to the museum and taken action on them.

A list of the accessions will be given by the curator-in-chief in connection with his annual report.

J. Q. ADAMS,
Chairman.

REPORT OF THE WOMEN'S AUXILIARY COMMITTEE

The activities of the women's auxiliary committee were confined to assisting the special committee in charge of arrangements for the reception at the opening of the new museum building on March 25, 1911.

ADELINE A. HOLLICK,
Chairman.

REPORT OF THE PUBLICATION COMMITTEE

The MUSEUM BULLETIN, edited by the curator-in-chief, has been issued monthly, including No. 23, June 1910, and No. 34, May 1911.

Volume II, Part III (July 1908–February 1909), including pp. 125–177, was issued August 18, 1910; Part IV (March–May, 1909), pp. 179–251, was issued September 16, 1910, and includes the volume index and title page.

Volume III, Part I (October–December, 1909), including pp. 1–54, was issued April 28, 1911; Part II (January–May, 1910), pp. 55–108, was issued May 2, 1911. Copy for the third and fourth parts of Volume III is in hand and can be prepared for printing at any time when the Association will authorize the printing.

PHILIP DOWELL,
Chairman.

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REPORT OF THE CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: I have the honor to submit herewith my fourth annual report as curator-in-chief, for the fiscal year ending May 20, 1911.

The event of greatest importance and most vital significance to the museum within that period was the acquisition of our new quarters. Negotiations for the transfer and for a necessary increase in the budget appropriation were begun immediately after the last annual meeting of the Association. Several months elapsed, however, before favorable action was taken by the city authorities, making it possible to conclude a lease of the house now occupied by the museum, and it was six weeks after the Association entered into possession before the needed alterations and repairs were initiated. The removal from Borough Hall was begun March 8 and concluded March 13.

It may be understood, therefore, that the record of the past year is one of preparation rather than achievement. Our new quarters, however, not only afford much better facilities for work on the collections and for storage, but enable us to separate the various departments and to bring the exhibits into better correlation. Under these improved conditions it should be possible to expand our activities in several directions, to be indicated in a latter portion of this report.

The participation of the museum in the municipal budget exhibit held last October was, in the opinion of many, a potent factor in securing for us favorable consideration. The space occupied consisted of two tables, each 2½ by 5 feet. On these were displayed two photographs of Room 309 in Borough Hall, then tenanted by the museum; six placards, printed for us through the courtesy of the Brooklyn Institute Museum, containing various comparative statistics as to attendance, appropriations, accessions, etc.; a photograph of the Billopp house, and samples of the various educational labels used in our museum. The budget exhibit remained open for one month and was very largely attended.

MUSEUM EXHIBITS

For reasons above given, no conspicuous alterations were made in the permanent exhibits, and no new exhibits were installed until after the removal. A brief synopsis of the present arrangement may be desirable as a matter of record.

First floor: Main hall, historical relics and photographs of Staten Island scenes. Southeast hall, two cases devoted to the Skinner collection of Iroquois Indian implements, to which Mr. Skinner has recently made some additions; two cases of Staten Island Indian relics; one case of local antiques and Revolutionary relics; two cases devoted to the Humphrey loan collection of African ethnology; and a case with a model

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of the Billopp house. Northwest hall, three cases containing the Chapin collection of local birds, and the two finely mounted owls recently presented by Mr. Charles Benedict; one case with eggs and nests of birds known to breed on Staten Island; one case of local reptiles and batrachians; one case of marine invertebrates; one case illustrating the life history of the periodical cicada; a large brood of which is due to appear on the island in the summer of 1911; and a fine collection of bird photographs by Mr. Howard H. Cleaves.

Second floor: Main hall, the large mounted eagle. Southeast hall, two cases of exotic shells; one case of exotic birds, and one case each devoted to animal weapons, insect architecture, and protective resemblance. On the walls are displayed a number of exotic butterflies of the genus *Papilio*. Northwest hall, two cases containing a general collection of ores and minerals; one case of German agates; three cases devoted to Staten Island geology; and numerous maps of the island.

There has been only one loan exhibit during the year installed by the committee of the Section of Art. This was of unusual interest and included antique silver jewelry and watches, old fashioned combs, fans, and other objects. It was placed on view in October and remained until the removal to our present building, where it was succeeded by a collection illustrating African ethnology, lent by Mr. and Mrs. George S. Humphrey.

ATTENDANCE

The total attendance during the year has been 4,888 as against 4,992 last year. On account of the removal, however, these figures are not strictly comparable. For the period, slightly in excess of nine months, during which we were in Borough Hall, the attendance was 3,297, as against 4,002 for the same months during the previous year. But the Hudson-Fulton celebration was responsible for a very large attendance in the fall months of 1909, while on the other hand, the number of visitors last January and February was greatly in excess of those in January and February, 1910, even though the Museum was partly dismantled and ready to close.

The April attendance in the new building was very gratifying, being 914 as against only 305 last year. With the approach of fine weather and the school examination, the May record has fallen off, as might be expected. The highest number of visitors, 133, was on May 15, when several classes were brought from Curtis High School by their instructor, Dr. A. J. Grout.

ACCESSIONS

The following table of accessions shows a total of 9,786 specimens, as against 7,370 last year. These figures are not quite exact, as an accurate count of some of the collections received cannot be made until they are catalogued. While the proportion of insects seems unduly large, it must be remembered that this group includes an enormous number of species,

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and an effort is being made to have our local study collection as complete as possible. The most important gifts during the year were those of Mrs. Walter C. Kerr, including numerous minerals, fossils, books, and a supply of chemicals; Mrs. A. H. McKenzie, including shells, corals, minerals, Indian arrows, and two skins of the quetzal; Mr. William T. Davis, 185 herbarium specimens of violets; Mr. Charles Benedict, numerous insects from Florida and mounted specimens of the barred owl and great horned owl.

ACCESSIONS TO THE MUSEUM AND LIBRARY DURING 1910–1911

Department of Zoology		
Insects	7,012 est.	
Shells	1,003 est.	
Other invertebrates	34	
Reptiles and batrachians	12	
Birds and nests	9	
Mammals	2	
Fishes	2	
	8,074	8,074
Department of Botany		249
Department of Geology and Mineralogy		525
Department of Arts and Antiquities		11
Department of Archeology and Anthropology		134
Books, Maps, and Photographs		487
Miscellaneous		306
		9,786

The expansion of the museum necessitated a considerable increase in the staff, for which provision was duly made in the budget appropriation. Following is the list of new employees, with the dates on which they entered the service of the museum:

Howard H. Cleaves, assistant curator	February 1, 1911
Alexander Forsyth, janitor	February 11, 1911
Lawrence Liedy, night watchman	March 6, 1911
D. M. Van Name, museum guard	March 27, 1911

Lawrence Liedy resigned on April 30, and the duties of night watchman are now being performed by a temporary employee until his successor shall have been appointed by the Board.

There has been no change in the honorary staff of the museum.

The curator-in-chief has been very largely occupied with executive duties, especially after active negotiations for the transfer of the museum were under way. Under the direction of the executive committee he pre-

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pared specifications for the various contracts involving repairs and alterations to the house, including the electrical, masonry, painting and papering, carpentry, and iron work, and supervised the execution of these contracts. He also prepared a set of plans of the house, on which was plotted the position of all furniture, thus facilitating the work of removal. During the summer the curator-in-chief made a number of field trips in the immediate vicinity, securing a considerable amount of material for the study collections and for use in exchange.

The assistant curator was at first chiefly employed in packing the collections for transfer from Borough Hall and later in arranging the exhibits in the hall of local biology. The excellent mounting of the Tuttle maps and the attractive display of the local bird bulletin, with its dates of arrivals and nesting places, are also the work of Mr. Cleaves. He has more recently been engaged in listing and arranging the collection of reptiles and batrachians. Mention should also be made of six lectures on birds given by Mr. Cleaves at various schools. These lectures, being mostly in the regular Board of Education series, have been well attended, and have afforded an excellent opportunity for advertising the museum and its work.

The museum assistant has continued the work of cataloguing the collections. She reports a total of 5,495 cards completed during the year, distributed as follows: Zoology 607, botany 3,661, geology 7, archeology 1, species catalogue 1,080, donor catalogue 139. 1,208 cards have been stamped for the catalogue, 408 pamphlets stamped and filed, and 167 exhibition labels written. In addition the museum assistant has not only had an increasing amount of clerical work in the museum but has performed many services of this kind for the officers of the Association. She also packed many of the more delicate specimens for transfer and has rearranged most of the books in the library. As the museum assistant is now regularly in charge of the second floor, much of her time is devoted to guard duty, especially in the afternoons.

The janitor and the museum guard have been efficient in their work and earnest in their devotion to the interests of the museum.

Mr. Davis, honorary curator of zoology, has helped us, as heretofore, with his kindly counsel and with many specimens for the collections. He furnished the material for the exhibit showing the life history of the periodical cicada, all being of the brood of 1894. He has also presented the set of violets prepared and determined by Professor Ezra Brainerd, the great authority on this group, thereby enabling our museum to retain its proud position as the owner of the third best collection of violets in the country. Mr. Davis bought and presented to the Association the laurels and rhododendrons now planted in front of the Museum; and he has recently added still further to his gifts by offering to start a subscription for the needed binding of books in our library with the sum of $25.

The honorary curator of geology, Dr. Hollick, reports that the only

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change made in the exhibits under his charge was the replacement of certain specimens in the stratigraphic exhibit by jars containing samples of the sands, soils, gravels, and clays of the island. He has been prevented by his long absence in Washington from taking his usual active part in the work of the museum.

The honorary curator of botany, Dr. Dowell, has little to report in his department. Until new, insect-proof cases can be provided for the herbarium, there is no opportunity for rearrangement or for the addition of mounted sheets.

Dr. Adams, honorary curator of art, was made acting secretary of the Association during the absence of Dr. Hollick and hence has been unable to give as much attention as usual to this department. He personally selected the wall papers used in decorating the Museum and has frequently cheered and aided the curator-in-chief with his advice.

LIBRARY

In my last annual report I referred to our urgent need for certain standard textbooks in various branches of biology. This need is more pressing, in view of the increased number of inquiries received and the importance of securing exact information in preparing our exhibition labels. There is also a large accumulation of pamphlets awaiting binding, and these are constantly deteriorating while they remain unbound. The president of the Association has authorized a subscription fund for this purpose, and the June issue of the MUSEUM BULLETIN will take up the subject in detail.

There are at present 71 institutions on our exchange list. 317 publications were received during the year. Seven are received as gifts from Miss Agnes L. Pollard, Messrs. William T. Davis, Arthur Hollick, and Charles L. Pollard; eight are deposited as loans by Mr. Howard H. Cleaves and Mr. Pollard. Three new exchanges were added, the Bulletin of the Charleston Museum, the University of North Dakota Quarterly, and the Transactions of the Connecticut Academy of Arts and Sciences. The publication of the Augustana College and Theological Seminary was dropped from the exchange list.

In addition to the above regular list 486 separates and special reports and bound books have been received from individuals and institutions during the year.

MUSEUM COOPERATION

The present tendency among museums is toward concentration of effort along special lines, in which affiliated institutions may be of mutual assistance. Thus the Brooklyn Museum, by virtue of the many valuable gifts of shells which it has received, may be said to have made a feature of conchology. Through the courtesy of Dr. Frederic A. Lucas, the

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curator-in-chief of the Brooklyn Museum, arrangements were made whereby Miss Helen Aitkin, in charge of this department, has undertaken the naming of our own very excellent collection of shells. In return we shall turn over our duplicates to the Brooklyn Museum.

The American Museum of Natural History has made a special feature of the collection of local insects, taken within a 50-mile radius of New York City. These have been placed in separate cases and have been officially committed to the custody of the New York Entomological Society. During the past winter various groups in the local collection were studied and determined by members of the society, and I have taken the opportunity of having our own material worked over at the same time, in return giving my own services to the American Museum, naming for them the groups in which I am interested.

By far the most important means of cooperation is afforded by the Association of Museums, which holds an annual meeting. At this convention the various curators present papers on matters of museum administration, details of exhibition, methods of mounting, etc., and in the social life of that meeting there is usually an opportunity to discuss matters of mutual benefit. So widely is the value of this association recognized that with very few exceptions the institutions of the country pay the expenses of their curators. In the proceedings of the past two years there will be found several contributions of my own, and the recently published list of American museums has nearly two pages devoted to the museum of the Staten Island Association of Arts and Sciences. I do not hesitate to say that the best ideas developed in our museum have been gained from attendance at the Museums Association meetings.

GENERAL REMARKS

In my various quarterly reports to the Board suggestions and recommendations for the betterment of the museum are made from time to time. Some of these involve merely a slight expenditure for supplies of furniture, easily made from our budget appropriation. Others require the cooperation of our friends in various ways. For example, the suggestion is made by the assistant curator, that the popularity of our exhibit of live animals warrants its increase and that cages containing specimens of the smaller mammals of Staten Island might properly be added. The honorary curator of geology recommends the installation of framed geologic and topographic maps. One of our members suggests that the value of the insect exhibits would be enhanced if cases were added showing metamorphosis in the various orders, as of a caterpillar to a butterfly, etc.; and there is no question that our display of local ornithology would be infinitely more instructive if the bird could be mounted with nest and eggs on the same branch. It has always been my desire to establish traveling schoo. collections, which could be used to illustrate the classroom work in ou

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local schools, and the present time is especially favorable for starting this new branch of our activity. But it will be noticed that all of these suggestions involve the expenditure of private rather than public funds, even though they inure to public profit. We are, in fact, confronted with this difficulty in almost every effort to develop the museum; and it serves to emphasize the fact that a small endowment fund, to which I have often alluded in reports and addresses before this Association as a desirable thing, has now become an urgent necessity. Other institutions have started their endowment funds before obtaining municipal support; we were given quarters by the city, a budget appropriation, and a special allotment for equipment. Our appropriation has now been more than doubled, a house has been leased exclusively for our use, and there is talk of the erection of a new fire-proof building when the lease expires. Yet the Association has not a dollar invested as a museum fund, and its own annual income is required almost entirely for its publications and ordinary running expenses. The museum should have four funds, not because they are theoretically desirable, but because they are absolutely necessary for our successful development along the lines of the policy already adopted by the Association. One is the library fund, to which reference has already been made. Another is the lecture fund, to enable us to give weekly lectures for the school children throughout the fall, winter, and spring. There should be a fund for the purchase of specimens required for special exhibits, not easily obtainable in the field; and finally there should be a research fund, wherewith the expense of collecting trips could be defrayed, and by which members of the staff might be enabled to visit other institutions occasionally in order to name collections, study methods of preparing exhibits, etc. The annual income for these four funds need not be large; it is probable that for our immediate needs, five hundred dollars would be sufficient, representing an investment of ten or twelve thousand dollars. The method of raising an endowment is entirely within the province of the Board to determine. But it should be borne in mind that as a rule, such funds are obtained by numerous small subscriptions rather than by a few large ones; and this emphasizes the importance of advertising our museum in every possible way, and by making its work known not only on Staten Island but elsewhere. The history of a successful museum is a record of constant endeavor; and the results achieved by some of our smaller institutions, with only modest means at their command, have been entirely satisfactory to those who by their gifts have made these results possible.

Respectfully submitted,
CHARLES LOUIS POLLARD,
Curator-in-chief.

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REPORT OF THE SECRETARY

New members elected during the year	16	
Resignations	13	
Dropped from roll	1	
On roll at date		312
Consisting of		
Active members	297	
Corresponding members	4	
Life members	2	
Honorary members	2	
Ex officio member	1	
Patrons	6	
		312

ARTHUR HOLLICK,
Secretary.

REPORT OF THE TREASURER

INCOME

Balance in hand at date of last annual report	$ 172.87
Since received from membership dues	760.00
Subscriptions to PROCEEDINGS	3.00
Subscriptions to dinner, March 25, 1911	240.28
Interest on life membership fund	3.95
New York City appropriation	5,531.18
Notes	945.16
	$7,656.44

DISBURSEMENTS

Printing PROCEEDINGS	$ 261.11
Printing and stationery	36.50
Treasurer's account	15.30
Sundry expense account	360.72
Subscriptions to periodicals	5.00
Expenses of dinner, March 25, 1911	266.57
Interest on note	3.43
Notes paid	800.00
Salaries, New York City account	3,887.89
Supplies, New York City account	1,735.03
	$7,371.55
Balance in hand	*284.89*
	$7,656.44

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ASSETS AND LIABILITIES

CASH ASSETS

Life membership fund, on deposit in savings bank	$ 100.00
Accrued interest on life membership fund, to January 1, 1911	16.27
Cash on deposit in Corn Exchange Bank	168.62
	$ 284.89

ADDITIONAL ASSETS

Back dues outstanding	$ 372.00

LIABILITIES

Estimated dues uncollectable	$ 150.00
Note	350.00
Total liabilities	$ 500.00
Total assets	656.89
Assets over liabilities	$ 156.89

C. A. INGALLS,
Treasurer.

REPORT OF THE SECTION OF BIOLOGY

This section has been comparatively inactive during the past season, only three meetings having been held, one at the home of Mr. William T. Davis, chairman of the section, on the evening of October 31, 1910; the second (the annual meeting) in the museum building on April 22, 1911; and the third, May 13, 1911, on which occasion Mr. Charles W. Leng presented a paper on Salt Meadow Beetles (contained in this issue, pp. 153–155).

Although the section has not been as active as usual, it arranged the spring series of three lectures for the benefit of the Association at large as well as the general public. These lectures have proved most satisfactory, having been attended by large audiences. The subjects and dates were as follows:

Saturday, April 22, 1911, With the Seminoles in the Florida Everglades. Mr. Alanson Skinner.

Saturday, April 29, 1911, Wild Flowers of Staten Island. Dr. A. J. Grout.

Saturday, May 6, 1911, The Expression of Emotion in Birds as Shown by the Camera. Mr. Clinton G. Abbott.

WM. T. DAVIS,
Chairman.

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REPORT OF THE SECTION OF ART

The Section of Art has held no separate meetings during the year. The regular meeting of the Association on December 17, 1910, was held under its auspices, when an illustrated lecture was given by Dr. Bruno Roselli on the topic Political and Religious Art in Medieval Siena.

The committee on exhibits of the section has taken an active interest, as heretofore, in the art loan collections installed from time to time in the Museum.

J. Q. ADAMS,
Chairman.

REPORT OF THE SECTION OF HISTORICAL RESEARCH

No meetings of the section have been held.

E. C. DELAVAN, JR.,
Chairman.

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Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i–iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

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Parts I–IV, October 1907–May 1909, pp. 179–251.

Volume III, Part I, October–December, 1909, pp. 1–56, issued April 28, 1911.

Part II, January–May, 1910, pp. 57–108, issued May 2, 1911.

Part III, October 1910–February 1911, pp. 109–152, issued February 15, 1912.

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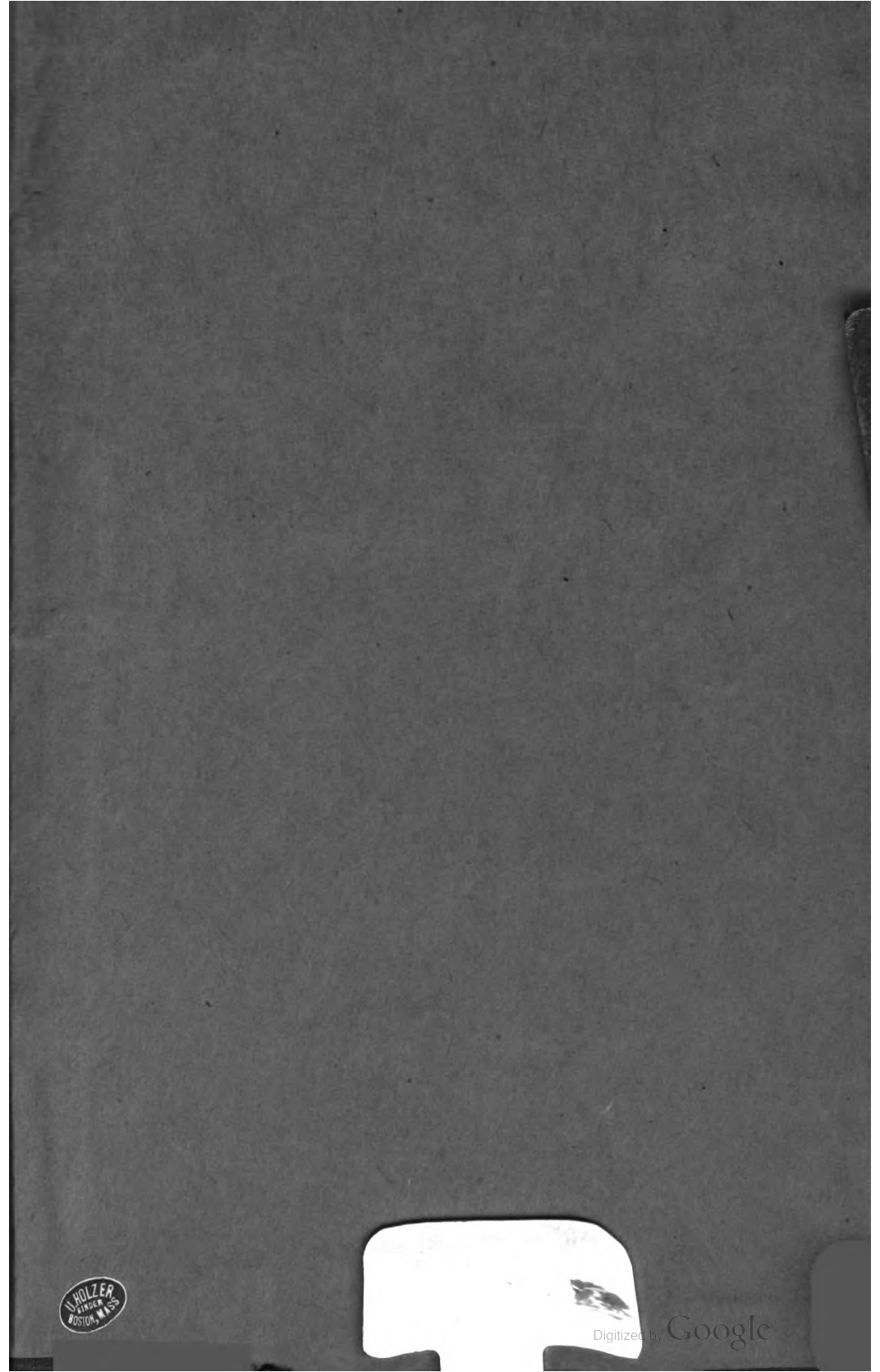
H. HOLZER BINDER BOSTON, MASS
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